Guest Article

SPORT MEDICINE - PRESENT STATUS

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In all competitive sports, three basic aspects are to be considered:

1. Promotional aspect or proper development of skilful sportsmen and athletes.
2. Preventive aspect- Prevention of injuries and illness in them.
3. Curative aspect - Treatment of injuries and illnesses and proper rehabilitation of athletes back to their games in fully fit condition.

1. On the promotional aspect, the most important requirement is the correct selection of the suitable candidates available for the particular sports. This can be judged by the Sports Medicine trained doctors by careful examination of the trainee, taking into consideration the various anatomical (structural), physiological (functional) and psychological (mental conditioning) factors. A thorough general medical examination of the trainee specially for any muscular, bone or joint and cardio-pulmonary deficiency or defects is necessary. Ophthalmological examination and psychological and aptitude tests are also needed. The doctor may have to suggest some particular or specific sports for some aspirants or they have to disallow strenuous activities in the case of some trainee depending on their capability and competence. For example, those who are short-sighted, may take up gymnastic, weight lifting, boxing, wrestling etc. Those who are tall may excel in highjump, basket ball, volleyball etc.; whereas short-statured boys and girls can take up cycling, swimming, long distance running, gymnastic etc.

In talent identification, a few recent developments need a little elaboration. The phrase "Catch them young" is very apt in the selection of athletes and players for a particular game or sports.

The age group between 5 & 6 years is considered to be the right age for selection. Genetic study is playing a crucial role in the process of selection. It has been conclusively proved that children belonging to a sporting family usually perform well in the long run, if suitably trained. Laboratory tests are also being employed in selecting a candidate for a particular sport. Skeletal muscle fibres consist of white and red fibres. White fibres are needed mostly for burst activities like sprints, whereas red fibres come into play for endurance games like middle and long distance running, and so by muscle biopsy and histopathological examination proper selection of candidates for a particular sports can be effectively made. Besides the structural and genetical attributes, psychology plays an important role in the proper selection of candidates. Performance in many ways is dependent upon psychological preparation and a well balanced and motivated athlete will usually perform well.

After selection of suitable candidates, the doctor can advise the coaches and trainers in the proper training schedule best suited to the body and mind of the athletes to improve their skill, technique and performance so that the basic inherent qualities in them can be fully utilised. Every sport has its own particular or specific movements and needs. Here, the exercises should be specific for the particular sporting activities; i.e. the actual movements required in that very sport. According to the recent trends, the emphasis should be more on functional hypertrophy rather than only on the increase in the girth of the muscle. It is important to find out which player has any deficiency, i.e. any lack of flexibility or strength of any particular group of muscles which need proper stimulation and loading according to demand. Then it will be possible to extract the best out of him. A doctor can also look after the athletes' diet, personal hygiene and habit, hours of sleep, physical fitness etc. The periodic medical check-up during practice and competition can be rendered by them.

A good general conditioning achieved through interval and endurance training programmes is the basis of all sporting activities. Strength training includes isometric exercises and different types of dynamic training. A good example of an effective dynamic strength method which has been developed in recent years is Isokinetic Strength training in which muscles are made to work against accommodating resistance. Bicycle Ergometer and Treadmill exercises are thus more extensively practised along with conventional weight training apparatus in the gymnasium. It is also essential to measure the physical efficiency and working capacity achieved through exercises. Various equipments and gadgets are now available for such measurements, and specially for energy and oxygen consumption capacity in the form of Electronic Spirometer, Douglas bag, Bicycle Ergometer and Oxycon 4 with Telemetry etc. To gauge effectiveness of training programme, work psychologists have devised various laboratory tests which are commonly employed in several European Countries. The following have found favour at some time or other, e.g.

(a) oxygen consumption,

(b) anaerobic threshold,

(c) lactate estimation,

(d) muscle biopsy etc.

Anthropometric measurements and body fat contents are also useful guides for proper selection of a candidate for a particular sporting event like athletic, swimming, weight lifting, jumping etc. Increased flexibility can be achieved by stretching exercises a modern form of mobility training which has proved to be very effective in preventing injuries to muscles, tendons and joints.

Physiologists have described how important it is for the athlete to follow a balanced diet before and after training sessions and competitions and to compensate for fluid loss during and after exercises.

Taking drugs to improve performance in connection with sports are to be deplored. Alcohol has deleterious effect upon performance upto 48 hours after consumption, which increases the risk of injury and tends to cancel out the beneficial effects of training. Sport and alcohol should not be combined. Tobacco too, has a detrimental effect on performance in

addition to other harmful side effects.

Sexually transmitted diseases and specially AIDS are creating a special problem amongst athletes and players living in camps and engaged in contact games. Various measures are being advocated for their prevention.

2. SPORTS INJURIES - PREVENTION AND MANAGEMENT

Injuries during games and sports are occupational hazards. These are very common in games where body contact is inevitable. Prevention of injuries and diseases by suitable sports, equipment and certain immunizations are necessary. This is the joint responsibility of the coaches and team physician to prevent injuries occuring in the particular sphere of sports and games. Before any player is permitted to take part in any competitive sports or games, he should undergo a thorough and complete physical check-up by a competent physician trained in sports medicine who will be in a position to give his opinion in person's ability to take part in the particular sports or games. The doctor should also ensure proper environment for games e.g. even surfaces of the play ground with adequate clearance all around. Markings on the playing fields should also be non-traumatic in nature and proper safety equipment must be placed on specific points around the arena. The doctor can also advise a correct protective wear, shoes, elastic kneecap adhesive strappings, skin and thigh-guards etc, appropriate for a particular game to minimise the extent and incidence of injury. While using the protective equipment, it must also be ensured that the equipment will not diminish the agility and ability of the player on the field.

3. Only one-third of sports injury require effective management by doctors specially trained in Sports Medicine. This group of injuries can be termed as "Occupational Hazards in Sports" and are due to over use of the particular part of the body associated with the particular type of sports. These injuries, because of their specific causation and peculiar nature, do require special attention if they are to be properly understood and managed (muscle strain, ligamentous sprains, tendinitis, bursitis, stress fractures, etc. associated with various games and sports).

In the management of sports injuries, the introduction of Arthroscopy both as a diagnostic tool and also for the management of various injuries of the joints has come as a boon. With its use the injuries of menisci, articular cartilage, ligaments and degenerative lesion of joints can be diagnosed accurately under direct vision and treated. Arthroscopy is being used extensively in sports injuries involving the knee, shoulders, ankle joint etc. Magnetic Resonance Imaging (MRI) recently introduced in our country is an added tool in diagnosis of various brain, spinal and joint injuries and diseases. Unlike ordinary X-rays, MRI pictures show the state of soft tissues on top of bony configuration.

In the field of rehabilitation, with the advancement of technology, various equipments-both mechanical and electrically operated, have been introduced to treat the injured part with the application of cold, heat and graduated exercises as the situation demands.

Now-a-days, women are taking part in almost all sporting activities at par with men, and more and more persons of advanced age groups are also taking part. Sports physiologists are working out the optimum norms and conditions which may be adopted to prevent undesirable side-effects and at the same time allowing to obtain enjoyment out of participation. High attitude and underwater sports and sports for the physically handicapped require special consideration in this regard as the environment and the physical condition are not the same as in normal sports on sea surface.

Sports Medicare has a long way to go in India. It is heartening to declare that with the formation of Sports Authority of India, with its headquarters at New Delhi and various regional centres at Patiala, Calcutta, Bangalore etc., a trial to develop sports in our country in a scientific way has been started. These centres are equipped with sophisticated gadgets and modern equipments and trained personnel to identify, train and assess the performance of sportsmen and render treatment to the injured and to rehabilitate the injured players back to their games. Unfortunately, we have not been able to disseminate the knowledge and facilities to the grass root level i.e. in the villages and peripheral areas from where most of the talents are likely to be identified and nurtured and efforts are to be increased in this direction.

UNUSUAL TUBERCULAR LESIONS

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Vast majority of world's population suffering from tuberculosis is seen in Eastern Hemisphere, as people here are poorly nourished and live in overcrowded and subnormal social conditions. The basic microscopic lesion, the "Turbercle" was discovered by French physician Laennec (1781-1826) from which the name tuberculosis is derived. According to Tuli (1991) [25] nearly 30 million people are suffering from tuberculosis and India alone has got 1/5th of the total world population of tubercular patients. Of all the patients suffering from tuberculosis, nearly 1 to 3 percent have involvement of skeletal system.

The commonest site for tuberculosis in the body is lungs but case reports of rare sites like tubercular mastitis (Akinola 1989)[1], valvular tubercular endocarditis (Cope 1990)[3] and tuberculosis of pancreas (Fernandez 1990)[5] etc are also mentioned in the literature. Similarly in osteoarticular tuberculosis most common site is spine and it comprises about 50% of all skeletal tuberculosis (Sanchis - Olmos 1948[16], Wilkinson 1949[29], Girdlestone 1950[7], Sevastikoglou 1953[17], Mukhopadhaya 1956[11], Falk 1958[6], Roaf 1958[15], Sinha 1958[18], Konstam 1963[9], Paus 1964[14], Grewal & Singh 1956[8], Tuli 1967[27], Martini 1988[10]). The regional distribution of osteoarticular tuberculosis seen by most of the workers in India and abroad is in the following order i.e. spine, hip, knee, sacroiliac joint, elbow, shoulder and others (Somerville and Wilkinson 1965[19], Tuli 1967[27], Sevastikoglour 1953[17], Sanchis Olmos 1948[16] and Martini 1988[10]). We have also observed a similar distribution in our Institute.

Apart from these common lesions there are unusual lesions of osteoarticular tuberculosis which are quite often seen and it is important to keep one's mind open to diagnose them. Many workers have reported these unusual lesions as case reports or as small series of 10-15 cases. Sepheriadou-Mavropoulour (1986)[24] has reported tubercular osteomyelitis of Jaw bone. Ormerod et al (1989)[13] has reported multiple tubercular bone lesions simulating metastatic disease. H.S. Sandhu[22] has reported 12 cases of tubercular osteomyelitis of long bones in 1983 and Chidambaram[4] in 1985 and Wilkinson et al[28] in 1984 reported two cases of Poncet's tubercular Rheumatism first described by Antonim Poncet (1897), which is a polyarthritis with visceral tubercolosis but

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no bacteriological involvement of joints themselves.

The unusual lesions seen in our series of 50 cases can be broadly subdivided into two groups. In the first group, tubercular lesions were found at unusual sites and in the 2nd group there is unusual presentation of these lesions at a common site for tuberculosis. In the first group, we have 36 cases and the unusual sites discovered are tubercular osteomyelitis of tibia (7 cases), femur (7 cases), iliac bone (4 cases) humerus (2 cases), radius (2 cases), cervical spine (2 cases), subtalar joint (2 cases) and one case each of clavicle, sternoclavicular joint, sternum, phalynx, rib, patella, navicular, calcaneum, middle cuneiform and metatarsals. In the second group of this series, there are 14 cases which include 8 cases of caries hip joint, 5 cases of caries spine and one case of caries knee joint. In the cases of caries hip, 4 cases had acute onset, 2 presented with pathological fracture neck of the femur one had a cystic lesion of the head and neck of femur and the last case was of Perthe's type of lesion. Out of the 5 cases of caries spine, 3 were extradural tubercular granulomas (2 in cervical spine, 1 in lumbar spine) and 2 were of caries of posterior element of dorsal and dorslumbar spine. Last case of caries knee joint presented with involvement of pes anserinus bursa.

Out of all the cases included in this series, 9 cases were of less than 10 years of age, 18 were between 11-20 years, 14 were of 21-30 years, 7 were of 31-40 years and two were above 40 years of age. There were 28 males and 22 female patients. Duration of disease was from 2 days to one month in four cases, 1-3 months in 20 cases, 3-6 months in 13 cases, 6 months to 1 years in 7 cases 1 to 2 years in 4 cases and more than 2 years in 2 cases. There was history of loss of weight and apetite in 14 cases and history of minor trauma was elicited in only 15 cases. The major signs and symptoms were pain in 46 cases, fever in 20, swelling in 39, discharging sinus in 11, some thickening of the bone in 25, enlarged regional lymph nodes in 24 and associated another lesion of tuberculosis (skeletal) was found in 5 cases.

Erythrocyte sedimentation rate was found to be significantly raised in 44 cases. Radiographs showed bone destruction according to the duration of the disease. New bone formation was seen in 8 cases only. Biopsy was carried out in all cases (except in 3 cases of acute onset tuberculosis hip) and was found to be positive for typical tubercular lesion in 39 cases while in remaining 8 cases biopsy report was inconclusive.

Out of 36 cases of tuberculosis at unusual sites, diagnosis was made clinically in 10 patients only. In these 10 cases, 5 were having associated tubercular lesion at a common site for tuberculosis (3 cases of caries hip, 1 case of caries knee joint and 1 case of caries 5th metacarpal), while in other 5 cases there was a suggestive history with a sinus adherent to the bone. In the rest of the 26 cases diagnosis was established either during the surgery or after getting the biopsy report.

All these cases in this series were collected in 10 years. From 1985 to 1990 case records of only 15 cases were collected while during 1990 to 1995, 35 cases have been added. May be we are more particularly vigilant to look for such cases during the last 5 years. Upto 1988, antitubercular Drugs consisted of injection

Streptomycin (.75 gm) + tablet Isonex (300 mg) + tablet Thiacetazone (150 mg) for three months and after that injection streptomycin was deleted and rest of the two drugs were continued for 18 months. But after 1988, schedule for severe infection consists of capsule Rifampicin upto 600 mg + tablet Isonex 300 mg + Pyrazinamide 1500 mg + tablet Ethambutol 800 mg for two months. Then we delete Pyrazinamide and Ethambutol and continue with Rifampicin and Isonex only for another 7 months. In mild to moderate infections, Ethambutol is not added to above schedule and after giving the above three drugs Pyrazinamide is deleted after two months and the rest of the two drugs are again continued for 7 months.

In the treatment of 36 cases of unusual site, Antitubercular drugs are given to all the patients. In 18 patients, only currettage was done, while in 5 patients, bone grafting was also added to currettage and in 2 patients, POP cast was also applied along with currettage and bone grafting. In 2 patients of caries cervical spine, I & D was done and in 3 patients, excision of the involved part of bone was done (2 cases of caries of ilium and one patient of caries rib). In 2 patients skin traction was applied along with Antitubercular drugs and in four patients only Antitubercular drugs were given. Prognosis was good in all these patients.

In the four cases of acute onset caries hip joint, all children, came with acute signs and symptoms i.e. severe pain, high grade fever, swelling etc. Duration of disease varied from 12 days to 2 months. 2 cases had enlarged inguinal lymph nodes and all cases had raised T.L.C., D.L.C. and E.S.R. On X-ray examination, 2 cases showed mild periosteal reaction along with subluxation of hip joint in one and intrapelvic pathological dislocation in the other. Needle Biopsy was carried out in one case only, which showed typical tubercular lesion. Antitubercular drug therapy along with skin traction was given to all the patients. Two patients had good recovery while other two had stiff ankylosed hip joints.

In the treatment of two cases of pathological fracture neck femur Antitubercular drug therapy along with skin traction was given in one case after confirming the diagnosis by needle biopsy and in the other case currettage, osteotomy and bone grafting was done to fill the cavity in the trochanteric area. Both cases had fairly good prognosis in regard to walking but with a stiff hip.

The 3 cases of extradural tubercular grannulomas presented with pain and weakness of the limbs, with disturbance of urinary and bowel function. E.S.R. was raised in all the three. X-rays were inconclusive as described by Berges[2] et al in 1981. Clinical diagnosis was lateral canal stenosis with PIVD L4-L5-S1 in one case and cervical compression myelopathy in the other two cases. Myelography showed indentation of contrast column in the lumber spine case and complete block in two cervical spine cases. C.T. scan showed bulging discs L_4-L_5, L_5-S1, and osteophytes in one case and extradural mass in other two cases with destruction of body and pedicles of lower cervical spine. Partial laminectomy L_4 & L_5 with foraminectomy and exision of an extradural soft tissue mass adherent to dura was done and in the other two cases of cervical spine, posterolateral decompression with evacuation of pus and grannulomatous

tissue was done. Biopsy of all the three cases confirmed the diagnosis. There was complete recovery within six months in all the cases. In the two cases of caries of posterior elements of spine, laminectomy in the dorsolumbar region and drainage of the cold abscess was done in one case while in the other partial laminectomy with removal of transverse process (right) of D6 vertebra with currettage of caseous material was done. Both the patients had good recovery from pain and neurological symptoms.

The last case of caries knee joint presented with a big swelling on the medial aspect of the right leg extending down from the vicinity of the medial hamstrings with duration of one month only. Needle biopsy showed caseous material. Curettage and excision of the bursa with its thick caseous material was done which proved to be tubercular on histology. Swelling was actually bursal extension of pesanserinus.

It is concluded that skeletal tuberculosis can have bizzare presentation as regard to the location or the clinical presentation and this being a common disease of developing countries one should always keep one's mind open while tackling such cases as reported by Tuli[26] in 1969. Such lesions seems to be quite frequent, but not usually noticed. Sometimes, the diagnosis may be suspected on clinical grounds, at other times, it may be suspected on investigations and on still other occasions during surgery or at histopathology. Some times, even histopathology may not be conclusive and a therapeutic test in these cases i.e. lesion healing with antitubercular drugs is a strong proof of it being a tubercular lesion.

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FRACTURE CLAVICLE

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ABSTRACT

The aim of treating clavicle fractures is to give the patient sufficient immobilisation and reasonable comfort during first few weeks of injury. The method of immobilisation should be efficient, comfortable, acceptable, non-complicating, suitable and as simple as possible. Thus among all the methods practised cuff and collar sling and triangular sling method in adults and adhesive tape strapping in children for undisplaced fractures of clavicle; for displaced fractures cotton sleeved inside stockinette is the best suitable method of treating fracture clavicle in all the ages.

Four hundred cases of fracture clavicle were treated with different material and methods of figure of eight (F.O.E.) bandage, their mode of trauma studied and drawbacks discussed in detail. Cotton sleeved inside stockinette was used in 60% cases of fracture clavicle and found to be easy, efficient, economical, acceptable, non-complicating method of F.O.E. bandage for the treatment for the treatment of fracture clavicle.

INTRODUCTION

The treatment of fracture clavicle in an active child, busy adult and idle old man has been greatly under-rated by saying "It's a minor fracture"; in respect to pain & disability caused during first 3 weeks. Thus to provide sufficient immobilisation and reasonable comfort in initial phase of treatment of clavicular fractures was the aim of this study and to practice a method which should be efficient, economical, acceptable, non-complicating and as simple as possible.

Extensive clinical studies reported in the literature have indicated that non-operative treatment is the treatment of choice. Clavicular fractures have been treated by various methods such as plaster spica, casts, straps, slings and even neglect occasionally. Nicoll in 1954 noted that more than 200 methods of treatment of fractures of the clavicle had been described. These fractures can almost be treated by closed methods with a high rate of healing and many of the large published series confirmed this observation. The use of stockinette for clavicular fractures promoted by firms inspired me to undertake a retrospective study of clavicle fractures treated by me since 1982, aggregating to approximately 400 in total.

ANATOMICAL FEATURES OF CLAVICLE

1. The nature of bone of the clavicle is not widely understood. Gardner described it as "thick compacta". Its outer third is flat, the middle and inner thirds are prismatic in shape.

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2. The clavicle is a bony frame work to give origin and insertion to the muscles of pectoral girdle (Cunningham).
3. The clavicle provides a protective cage for the subclavian and axillary vessels and the brachial plexus (Peter Stone).
4. The clavicle is an excess part of human body. The bone can be partially or completely excised without creating significant disability (Abbott).

MODE OF TRAUMA

The clavicle is the most vulnerable bone of the human body, accounting for 5-10% of all fractures (Moore, 1951). Fall on outstretched hand is the commonest cause of such a solitary fracture. The fracture may be caused by a fall, hitting the shoulder on the ground. Collision of two bicycles may cause a fall on the road. Turning turtle rickshaw, autorickshaw may cause fracture clavicle. In fast passenger buses at acute turn the overhead luggage may fall over the shoulders and cause fracture clavicle. In night journeys the sleeping passengers may fall down from the berth and have fracture clavicle. Sudden high speed brakes may break the clavicle by jerk or dashing shoulder to the back of chair in a bus. Fall from the trees or stairs or a jhoola is the commonest cause among children and particularly in rural areas. Injury by lathi, blow of fist, fall of a child over the body specially over the shoulder may result in clavicle fracture. Clavicle may be broken by a fall from a chair, thrown out from the speedily moving car when the door gets opened. Scooter riders may get fracture clavicle by road obstructions by a heavy pig, buffalo or a dog or because of an unwarranted speed-breaker on the road.

SITES OF FRACTURES

The most common site of clavicle fracture is the junction of lateral and medial curvatures, but any other site, either of the ends, comminution or double fractures in one clavicle are also not uncommon. It may be a compound fracture of clavicle tearing the skin and protruding the fracture ends outside and vice versa piercing inside the alveoli of lung which in turn opens up to the atmosphere (Franklin). It may be associated with surgical emphysema.

RADIOLOGY

For complete radiological diagnosis it should not be a "postage stamp" film. X-rays should be done in AP and oblique views. AP view should include upper lung fields, full length clavicle, shoulder and upper third of humerus, so that pulmonary complications and fracture around shoulder can be detected. Oblique view indicates the degree of anteroposterior displacement of fractured fragments of clavicle. Axial view of shoulder should also be requested in case of suspected fracture of lateral end of the clavicle.

MATERIAL AND METHODS

Figure of eight (F.O.E.) bandaging is very ancient and time tested method of treating the clavicle fractures. Material and methods of F.O.E. bandaging have been improvised from time to time and changing every time. The methods included

1. Using only roller gauge for F.O.E. causing constant friction in axilla.
2. Cotton ring and bandage with a large knot on the back causing discomfort to lie.

3. In children arm to chest strapping.
4. Use of cotton bandage rings strapped on the back with adhesives. A time consuming process with allergic dermatitis at times due to the adhesive.
5. F.O.8 crape bandage. Good but loosening occurs.
6. Use of 10 to 12 meters long 15 to 20 cms wide gauze than bandage, stretched one metre or more over the table top for 5 times. Over these 5 layers 8 cms wide thick layer of cotton in 80 to 100 cms length was put. Cotton layer was covered by next five layers of bandage. This was made into a rope-like belt after turning the margins of bandage over the cotton. By encircling adhesive tape over this rope at 6 to 7 places of equal distance the cushioned bandage was ready for F.O.E. This was a costly affair because of high rates of 10 metres long bandage than.
7. Use of readymade clavicle belts. But it also caused pressure sores over the clavicle and in the axilla. More so the easy availability at periphery was very much scarce. It was costlier also.
8. Use of cotton and safety pins alongwith stockinette. Properly thick layered cotton was inserted inside the wide stockinette by sleeve method. After reduction of fracture clavicle the improvised and cushioned stockinette was tightened in F.O.E. shape and the ends of it were pinned up externally by 2-3 safety pins. The arm was given rest in either cuff and collar sling or triangular sling. Wider stockinette can reduce and maintain better than thin bandages.
9. Operation on the clavicle for open reduction and intramedullary pin fixation in one case and in another case the plating of shaft of clavicle with six hole DCP and 3.5 mm A.O. cortical screws.

So far it has been found that cotton sleeved inside stockinette is the best of all the described methods for displaced fractures of clavicle.

OBSERVATIONS

- 400 cases
- Age:1 day to 80 yrs.
- 60% males, 40% females
- 5% double fractures
- 5% comminution
- 1% compound
- 1 case of non-union
- 40% Radiological mal-union but clinically excellent
- 1-2% delayed union
- 85% Excellent results

RESULTS

The criteria for the best method were easy availability, economical, non-irritant, easily applicable, able to maintain the durable reduction of fractures, no complications like allergy, swelling, numbness and paraesthesia. The clinical criteria for union were lack of tenderness, pain at the fracture site and a full range of shoulder movements. The radiological criterion of healing was obliteration of the fracture site by callus with trabeculae crossing the fracture gap. Based on these

criteria the average time to solid union was 4 to 12 weeks.

DISCUSSION

Out of 200 reported methods of clavicle fractures, the customary F.O.E. bandaging is the best closed method. Paffen and Jansen treated 1400 clavicle fractures during 1968-76 and found customary good to excellent results after closed treatment. Zenni and Krieg of 800 cases during eight years found that open reduction was necessory in only 25 cases and good to excellent results were obtained after closed treatment in the others. Rowe and others noted that certainly clavicle fractures can and should be treated by closed methods using some form of external immobilisation.

Berkheiser found 9 non-union while Neer 18 and Ghormley 20 out of their large series. Johnson and Collis studied 69 non-union of clavicle during the period of 1939 to 1962 at Mayo Clinics. Howard and Shaffer found 14 cases of neurovascular complications in the four years study. Peter stone, 1955, described four cases of subclavian vein thrombosis due to clavicle injury. Neviaser reported 11 cases fixed by Knowles pins. Ali Khan operated 20 mid clavicular fractures by plate fixation with a dramatic relief of pain within 12 hours.

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MANAGEMENT OF COMPLICATED FRACTURES OF CLAVICLE BY INTERNAL FIXATION

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ABSTRACT

During Jan. 1993-Oct 1994 20 cases out of 43 fractured clavicle were treated by open reduction and internal fixation by intramedullary Moore's pin/Krischner wire, of which 13 patients were accompanied by bone grafting. The minimum age was 16 years and maximum 60 years. The average followup was 7.4 months. Results were analysed according to the criteria of Herscovici et al (1992) Six patients had excellent. ten had good and, four had fair results. It was observed that in selected cases open reduction and internal fixation yielded excellent functional and cosmetic results.

INTRODUCTION

Fracture of the clavicle in an adult is a painful injury and is occasionally associated with neurovascular damage. The most common site of fracture is the middle third, as demonstrated in 82% of cases by Rowe (1968). In most of the patients a satisfactory functional result is obtained with conservative management.

Occasionally internal fixation is indicated by various authors (Moore, 1951; Rowe 1968; Neviaser et al 1975; Zenni et al 1981) have recommended internal fixation by medullary pinning. Internal fixation for fractures of the clavicle is not usually recommended because of the dangers of non-union, infection, pin migration etc. Neer (1960) reported an incidence of non-union of 4.6 % following primary open fixation, whereas Rowe (1968) showed non-union in 3.7 % of cases following early open reduction.

The usual indication for internal fixation are neurovascular complications and non-union. There are however other indications for its use, such as gross displacement of the fragments, segmental fractures or persistent pain and in those cases when the overlying skin is in jeopardy.

CLINICAL MATERIAL AND METHODS

The present study was conducted in the Department of Orthopaedics and Traumatology, Gandhi Medical College and associated Hamidia Hospital, Bhopal from

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January 1993 to October 1994. In this series 43 cases of fracture of the clavicle were taken up for the study, 20 cases were treated by conservative method and 23 treated by operative method of open reduction and internal fixation by Moore's pin/Krischner wire with or without bone grafting. From operated series 3 cases were excluded because 2 were lost to follow up and 1 died because of problem unrelated to fracture claviel one month after operation. So the present study was done on 20 selected cases, of fracture clavicle having gross displacement, symptomatic non-union and comminution. These cases comprised of 13 males and 7 females. The youngest patient was 16 years old and the oldest was 60 years of age. Patients were followed up from 6 months to 12 months with an average of 7.4 months.

MACHNISM OF INJURY

Fall on outstretched hand 12 cases, Road traffic accident 6 cases, Direct trauma on the shoulder 2 cases.

RADIOLOGICAL EXAMINATION

X-ray was useful in determining the line of fracture and amount of displacement.

An anteroposterior view of the clavicle on a large film to include the upper third of the humerus, the shoulder girdle and the upper longs field, was taken, so fracture of the scapular neck could not be missed. X-ray was also necessary for confirmation of clinical diagnosis and type of fracture.

If required an oblique view of the clavicle was taken to demonstrate the anteroposterior displacement of the fracture fragments.

In suspected cases of fractures of scapula an axillary view was also necessary to see fracture of acromion, coracoid and fracture of the neck of scapula.

OPERATION

Indications of operation in our series, were as follows

1. Gross displacement or severe angulation of the middle third with fragments impinging on the overlying skin.
2. Fractures in distal third of clavicle with disruption of coracoclavicular ligament.
3. Symptomatic non-union.

OPERATIVE PROCEDURE

The 11 operations were performed under regional-block anaesthesia and 9 under general anaesthesia. The patient was placed supine on the operation table and a sand bag was kept behind the shoulder on the side of operation. The extrimity and shoulder are draped free, so that entire extent of the clavicle can be exposed in the operation field.

A linear incision about 5 cm long was made directly over the clavicle and carried to bone, then with minimal subcutaneous dissection and minimal periosteal stripping the fracture fragments were mobilised. With a steinmann pin 3.0 mm medullary canal of medial fragment were reamed for 7.5 cm, then pin removed and passed into medullary canal of lateral fragment, emerged near the canoid tubercle. A small stab incision made and allowed the pin to emerge through it.

Then this pin was removed. A Moore's pin/Krischner wire of proper size was selected, with help of hand drill passed in retrograde manner into the lateral fragment and brought out through skin. The fracture

was reduced under direct vision and then pin was passed into the medial fragment.

The stability of the fracture was checked and the part of the pin out side the skin was cut by nail cutter, and embeded well beneath the skin.

In cases which were comminuted or reported after six weeks, cancellous strips of bone graft kept around the fracture site, then the wound was closed in layers.

Post operatively the limb was immoblised in commercial shoulder immobiliser/triangular sling for six weeks. Gentle exercise were started after 4 weeks and when there was evidence of clinical and radiological union, the pin was removed under local anesthesia. In 5 patients the fixation device was not removed because there was no complaints. After union they were assessed for pain, medication and present life style, muscle strength & range of movements of shoulder in fixation and abduction, the functions with lowest range of motion or the weakest muscle strength was recorded.

RESULTS

The average time for fracture healing was 8.26 weeks (ranging from 8 to 11 weeks) as assessed by the disappearance of the fracture lines on plane radiographs.

Patients were rated as having excellent, good, fair or poor results using the criteria of Herscovici et al (1992).

According to scoring system of Herscovici et al out of 20 operated patients 6 had an excellent result, 10 had good result and 4 had a fair result. The average score for the twenty operated patients was 10.17 points.

Four had no pain, ten had mild pain and six had moderate pain with prolonged activity, required medication for pain control. Four had returned to previous life style and 12 had limited certain activities. Only 4 patients needed minimal assistance. 6 patients achived range of movement greater than 120 in both abduction and flexion of the shoulder and 10 had 90-120, four patients had 45-90 in both abduction and flexion of the shoulder, copaired with that on the normal site. Four patients obtained Grade 5 muscle strength, 12 patients obtained Grade 4 and 4 Grade 3 muscle strength.

COMPLICATIONS

In the present series in the operated group one patient had superficial infection, two patients had deep infection. Culture and sensivity was done and with appropriate antibiotics eventually healed in 2 weeks. In one case Moore's pin migrated through the sternal end of the clavicle and became subcutaneous.

DISCUSSION

Nicoll, in (1954) noted that more than 200 methods of treatment for fractures of the clavicle had been discribed even though a sling consistently gives good functional results.

Rowe, in (1968) noted that fractures of the middle third of the clavicle are greately under rated with respect to the pain and disability they produce, especially during the first three weeks of treatment.

He concluded that it is almost impossible to support and immobilise a fracture of the middle third of the clavicle in an adult by external support.

In vast majority of cases, however, slings and strapes do produce excellent

results, certainly most clavicular fractures can and should be treated by closed methods using some form of external immobilisation as noted by Rowe and others.

Open reduction and internal fixation of fractures of the clavicle has generally been considered too radical, even though most authors have agreed that treatment by external support in adult is associated with several weeks of painful disability. Although the pain and disability can be markedly diminished by open reduction and internal fixation, this advantage ordinarily is not deemed sufficient to justify operative treatment.

Paffen and Jansen (1978) in a review of 1400 clavicular fractures treated between 1968-1978, found the customery good to excellent results after closed treatment. However, for 73 of these fractures open reduction and intramedullary Krischner wire fixation with of without supplemental circlage wires was required. In these 73 fractures the rate of non-union was 3.0% which was considerably lower than the rates in Neer's and Rowe's series. Neviaser et al (1975) also reported excellent results after intramedullary fixation using Knowel's pins.

Zenni et al (1981) during 1970 to 1978, twenty five of approximately 800 patients with a fracture of the clavicle were treated by open reduction and internal fixation with threaded intramadullary wire, or pin with circlage suture (one case), all fractures healed without infection or migration of the pin.

In our series in 20 operated cases, union was seen in 75 % cases, the average duration was 5.56 weeks for clinical and 8.66 weeks for radiological union. Non-union was seen in 25 % cases whereas it was 10% in patients treated conservatively. Functional results were excellent in 6 patients, good in 10 patients and fair in 4 patients in the operated group.

We belive that fractures of the clavicle must be evaluated carefully and a decision made based on all facts of each case. The method of open reduction and internal fixation is simple and well suited to fractures of the clavicle which is an `S' shaped subcutaneous bone with a small medullary cavity. The intra-medullary device is meant to be an internal splint that maintains alignment but not rigid fixation. Reduction of the fracture and insertion of the intramedullary pin can be accomplised with the little disruption of the periosteum or the other soft tissues.

We belive that indications for open reduction and internal fixation should be as follows :

1. Fracture of the distal third with disruption of the coraco-cavicular ligament and marked displacement of the fragments.
2. Severe angulation or communition of a fracture in the middle third of the clavicle causing compromise of the integrity of skin overlying the fracture side.
3. An unsightly cosmetic result anticipated because of displacement and communition of the fractured fragments.
4. Symptomatic non-union followed treatment by closed methods.

Though the series is small and follow up is short, we feel, that in selected cases open reduction and intra-medullary fixation will provide an excellent cosmetic and functional results.

Table 1. Showing incidence of symptoms

OPERATED CASES

S.No.	Symptom Group	No.	%
1.	Restriction of motion of shoulder; Pain at # site	8	40
2.	Restriction of motion of shoulder; Pain at # site with click	4	20
3.	Restriction of motion of shoulder; Pain in neck and at # site	3	15
4.	Restriction of motion of shoulder; Pain at # site, Hyposthesia in ulnar distribution	3	15
5.	Pain at # site and in neck on motion of arm	2	10
	Total	**20**	**100**

CONTROL CASES

S.No.	Symptom Group	No.	%
1.	Swelling, Pain at fracture site, Deformity of collar bone, Disability in shoulder abduction	8	10
2.	Pain at fracture site and with motion of arm; Deformity of collar bone, Disablity in shoulder abduction.	10	50
3.	Deromity in collar bone, slight restricted shoulder abduction, Prominent Medial fragment	2	10
	Total	**20**	**100**

Table 2. Showing functional assessment of operated and control cases

	SUBJECTIVE EXAMINATION	Operated cases		Control cases	
	Pain	**No.**	**%**	**No.**	**%**
1.	None	04	20	12	60
2.	Mild	10	50	04	20
3.	Moderated	06	30	04	20
4.	Severe	00	00	00	00
	Total	**20**	**100**	**20**	**100**
	Life Style	**No.**	**%**	**No.**	**%**
1.	Occupation and sport activity level equal to pre injury state.	04	20	06	30
2.	Injury caused occuptional change/ limited certain sport activities	12	60	14	70
3.	Can only perform activities of daily living/needs minimal assistance.	04	20	00	00
4.	Total disability	00	00	00	00
	Total	**20**	**100**	**20**	**100**
PHYSICAL EXAMINATION					
RANGE OF ABDUCTION/FLEXION OF SHOULDER		**No.**	**%**	**No.**	**%**
1.	>120	06	30	10	50
2.	90-120	10	50	10	50
3.	45-90	04	20	00	00
4.	<45	00	00	00	00
	Total	**20**	**100**	**20**	**100**
	MUSCLE STRENGTH	**No.**	**%**	**No.**	**%**
1.	Grade 5	04	20	10	50
2.	Grade 4	12	60	10	50
3.	Grade 3	04	20	00	00
4.	Grade 2 or less	00	00	00	00
	Total	**20**	**100**	**20**	**100**

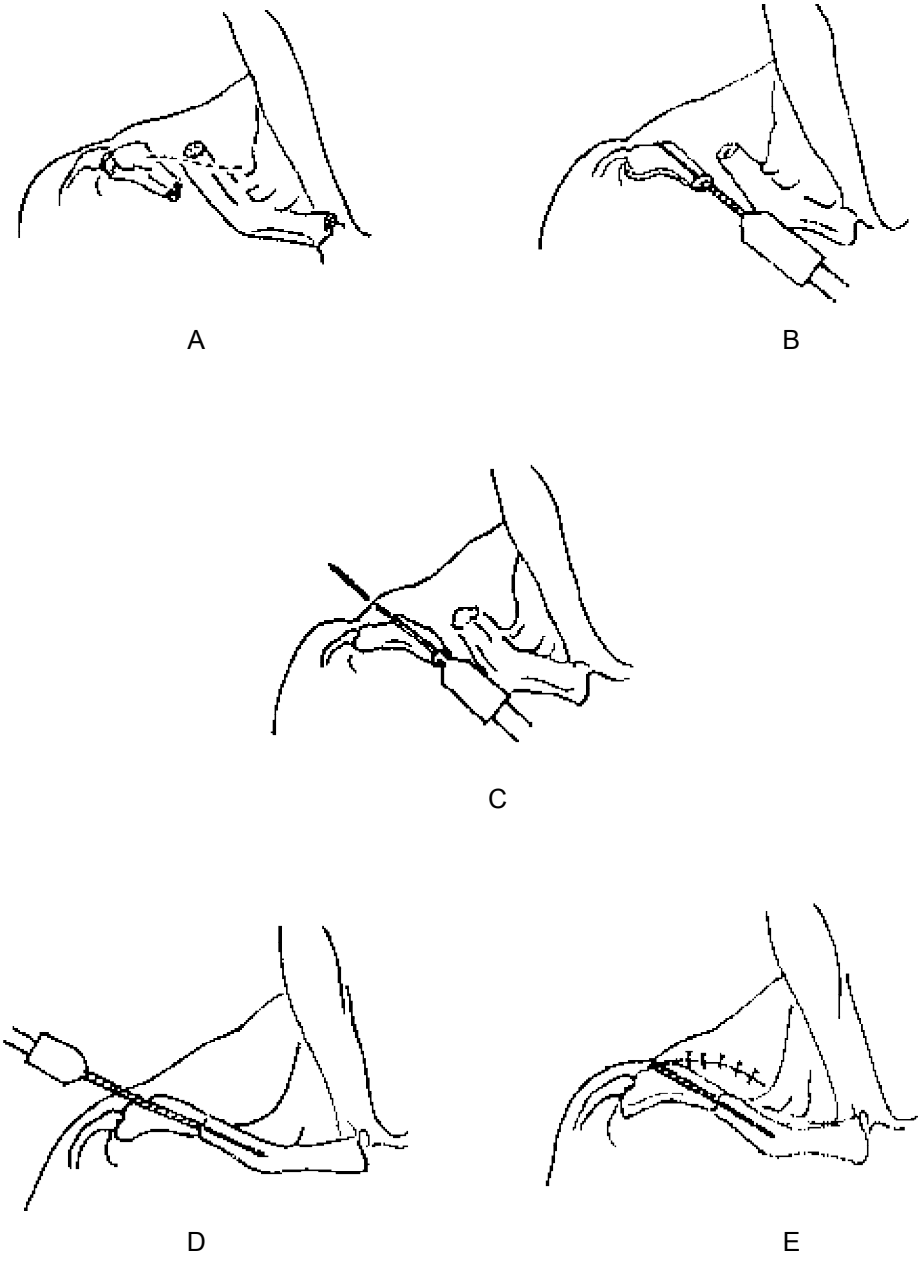

Fig. Technic for inframedullary fixation of the clavicle

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IPSILATERAL FEMORAL NECK AND SHAFT FRACTURES

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ABSTRACT

Experiences in the management of eight cases of fractures of femoral neck with ipsilateral femoral shaft fractures are reported alongwith a brief review of literature on the subject. In four cases the neck fracture was diagnosed after the femur was already fixed with a k-Nail for shaft fracture. In the remaining four both the fractures could be diagnosed at the time of admission. Different methods were used to fix these fractures. The follow up ranges from 4 months to 6 years (average 3.5 years). The end results were satisfactory in all the cases. It is emphasised that X-ray of the pelvis should be taken in all the cases of fracture shaft of femur at the time of admission, so that the fracture or the femoral neck is not missed.

INTRODUCTION

This unusual injury was first reported by Delaney and Street[2] (1953); approximately 200 such fractures have been reported in the literature. About 19% of femoral neck fractures are discovered late or during treatment of femoral shaft fractures. In femur, stress at two levels can lead to fracture of the shaft with either fracture of neck of femur on the same side (Friedman et al[3] 1986) or with dislocation of the hip joints (Helal et al[4], 1967). We report our experience in the management of eight such cases of epsilateral femoral shaft and neck fractures.

MATERIAL AND METHODS

The eight cases reported were seen by the authors during last eight years. 6 were males and 2 females. All the cases sustained trauma due to road traffic accidents. Out of the eight cases four could be diagnosed at the first examination and they were treated by Moore's pinning or Asnis screw fixation for neck and plating for shaft of femur (Fig. 1). In other four cases the neck fracture was discovered later when 'K' Nail had already been done for fracture shaft of femur (Fig. 2), because X-ray of the pelvis was not taken initially when Check X-ray was done to see the position of the nail the neck femur fracture was discovered. All these cases were treated by passing three Moore's pins into the head of femur by the side of the K nail (Fig. 3). In one case sartorius muscle pedicle bone graft was also added, because it was detected more than 3 weeks after the trauma.

OBSERVATIONS & RESULTS

There were 6 males and 2 female patients. The age ranged from 20 to 48

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(average 35) years. Superficial infection was seen in two cases which healed with antibiotics. None of our cases had delayed or non-union. The results were satisfactory in all the cases.

DISCUSSION

Over 60 different methods have been advocated in the literature for treatment off this rare injury. Swiont-Kowski8 in a review of literature estimated 0 to 4.5% to 15% avascular necrosis rate and 5% nonunion rate for the femoral neck fractures and a 5% non union rate for the femoral shaft fractures. We had none of these complications in our series. This better prognosis for femoral neck fractures is explained by the fact that most of the energy causing the fractures is dissipated to the femoral shaft, with less resultant displacement or the femoral neck fracture. Any patient sustaining high-energy trauma should be thoroughly examined with a roentgenographic survey of the femoral neck area to rub out this combination of injuries.

The best treatment for these fractures remain controversial. Swiont-Kowski8 and other reported reduction and fixation with lag screws for the femoral neck fracture and a condylocephalic nail introduced from the medical femoral condyle for the shaft fracture. The use of a hip compression screw and long side plate has also been reported. More recently threaded pin or cannulated screw fixation into the femoral head combined with interlocking medullary nailing of the shaft femur, has been advocated by Bucholz (1985) and others1. The Russell-Taylor7 reconstruction nail was designed for this injury specifically. Henry and Seligson5 used this nail successfully for this type of injury. Leung, So and Lan6 (1993) used A.O. 6.5 mm cancellous screws to stabilize the neck fracture alongwith intramedullary nailing of shaft of the femur. When an undetected neck fracture is found after conventional medullary nailing of a femoral shaft fracture the nail should be left in place and cannulated screws or threaded pins should be inserted from anterior or threaded pins should be inserted from anterior to posterior into the femoral neck from the shaft to fix the femoral neck fracture. We did this procedure in three cases. For cases operated later than 3 weeks after trauma one may add muscle pedicle bone graft as we did in one case,

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SIGNIFICANCE OF BICIPITAL TENOSYNOVITIS IN EARLY PERIARTHRITIS

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ABSTRACT

The frozen shoulder or Periarthritis is a common clinical disorder in Orthopedic practice. In rural set up like ours many patients of Periarthritis report in O.P.D. with disability and loss of earning capacity. We decided to study these patients with minimum of invistigations. Routinely only X-Rays of shoulders were done. On Clinical examinations in early cases the point of maximum tendernes was found to be over the Bicipital groove.

According to the old study of Lipmann Bicipital Tenosynovitis is the triggering point in the Patho-physiology of frozen shoulder. Lipmann has resorted to surgical exploration of this tendon. We decided to block the pain path-ways by local infiltration of steroid plus Xylocaine and Hylase. We studied in our out patient department about 140 cases. In all these patients the point of maximum tenderness was found to be in the biciptal groove and the local injection was given. All the patients recovered within a period of 7 to 21 days without having to go to a physio-therapy centre and doing exercises, only at home. Advanced cases of frozen shoulder were not included in this study.

It is to be concluded that blocking the painful point in Bicipital groove by steriods and followed by exercise regimens at home helps in early return of shoulder joint movements.

The Condition is chronic benign slowly progressive, intitially starting with dull aching sensation or heaviness in the area of shoulder & arm occassionaly. This sensation of heaviness & dull pain gradually increases in intensity & frequency. The condition may be aborted at this stage & complete recovery may take place.

The pain gradually increases in intensity & frequency. This period ranges from few weeks or months which is followed by increasing stiffness of the movements at the shoulder joint. As the disease progresses the pain becomes constant & seriously disturbs the sleep, in the established stage there are absolutly no movements at the joint & patient frequently complains of severe throbbing pain at rest. The duration of illness is about few months to 1 year or even more than a year. If we look into the duration & morbidity the period is considerable even so as the recovery period which is again 6 months-1 year, that to the recovery is often 20 to 30% deficient. If the management is carried out as described in the literature that is NSAID, local heat applications, physiotherapy and manipulation under anaesthesia there is lot of suffering to the patients. If with some form of management the duration of the

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illness and the recovery is reduced to weeks from months or years it will have a revolutionary change in the present day management of this disabling condition.

Before looking into the study conducted we would like to discuss briefly the present day management which is as follows.

(1) Rest to the joint.

(2) NSAID

(3) Local Heat Application

(4) Local Steroid Infiltration

(5) Manipulation Under Anaesthesia

(1) REST TO THE JOINT

In the acute stage of tenosynovitis the patient complains of severe agoinsing shooting pain which increases on attempted movements, however in most of the cases patient complains of severe pain at rest. In these circumstances rest to the joint will not give any relief to the patient.

(2) LOCAL HEAT APPLICATION

Local heat application again does not give relief however it is frequently reported by many patients that very little relief is obtained by pressing or massaging the anterior part of affected shoulder with palm of the opposite hand. The patient adopts a typical posture of holding the affected shoulder with the opposite hand.

(3) NSAID

The NSAID are most widely and extensively used drugs in these cases. Patients take these drugs on their own. When the patient starts getting symptoms he runs to his family physician or locally available doctor who immidiately prescribes some kind of NSAID or analgesic. In initial stages some relief is obtained and patient goes to his work again. After some days or months he gets pain and some or the other drugs are prescribed by the doctor or the patient him- self so that the symptoms becomes more and more agonizing.

(4) PHYSIOTHERAPY

The role of physiotherpy in the patient of frozen shoulder is aimed at obtaining the range of movement in stiff and painful shoulder. It is a widely used method of treatment. The disadvantage with this method is that it requires trained physiotherepist and a center which is not easily avialable to our rural population. The other point to be discussed regarding physitotherapy that in cases of frozen shoulder the main factor which causes stifness of shoulder is severe persistent pain which is exagarated by slightest movement. In established cases of frozen shoulder patient compains of intense rest pain. Patient does not want to move his joint. Even on repeated persuation as the patient tries to move his joint physiotherapy does not give any relief unless pain is relieved.

LOCAL STEROID INFILTRATION

Local Infiltration of steroid is a widely used procedure discussed and Criticized by many Orthopaedic surgeons. However well documented results of this procedure are not available.

MANIPULATION UNDER ANAESTHESIA

This is not a very conmonly used method of treatment. More over it requires Hospitalization & Anaesthesia which are not available in our area.

PREVALENCE

In our series of 140 Patients 75 were male & 65 were female.

Involvement of the Rt. Shoulder was more than the left.

Onset : 3 patients presented with acute onset (H/O Less than 7 days) all were in the younger group (Below 30 years)

Rest 137 patients presented with insidious onset.

DURATION OF SYMPTOMS

20 patients reported within 1 to 3 months

88 patients-reported after 3 to 6 months

12 Patients came after 12 months of illness.

AGE GROUP

Majority of the Patients (82) were in the age group of 50-70 years.

52 Patients were in the age group of 30-50 years.

3 Patients were below 30 years of age.

URBAN RURAL RATIO

3/4th of the Patients were from rural popluation.

OCCUPATION

2/3 patients were from labour class while only 8 patients belong to executive class 39 patients were housewives.

MAIN PRESENTING COMPLAINTS

20 patients presented with pain early. 88 patients presented with pain & stifness.

12 patients presented with stiffness only. 20% patients gave the history of severe noctrurnal pain.

Contrary to what is said usually history of severe trauma like fracture was present only in one case while history of trivial trauma like over use of shoulder was given by 5 patients.

History of Immobilization of shoulder was present in 8 patients.

Other significant condition in history was H/O Myocardial Infarction in one patient.

5 Patients were known Diabetics

All Patients were managed in out patient department.

MATERIAL & METHOD

Study of 140 patients of painful shoulder with varying degree of shoulder stiffness was done during the period of 1991-1994 at Indira Gandhi Hospital on out patient basis with minimum of investigations. Routinely only X-Rays of shoulder were done to rule out the fractures & Calcific deposits.

On clinical examination in all these patients the point of maximum tenderness was always found to be over the Bicipital groove & on rolling the tendon by thumb, it was extremely painful.

Bicipetal tendon was located in the Bicipetal groove, invariably the most tender point was injected with one of the long acting steroids with 2% Xylocaine & Hylase. The patients were again examined after 15 minutes for pain & R.O.M.

There was definite Improvement in the Range of movement of the affected shoulder after the Injection of steroid & pain also reported to be less.

Patients were sent back to their homes with advice to have exercises regimen at home. Weekly follow up was done.

Maximum patients recovered completely within the 2-3 weeks period without having to go to physiotherapy centre & doing exercises only at Home.

DISCUSSION

Tenosynovitis of the Long Head of Biceps is a common cause of shoulder pain & stiffness specially in the people of elderly & milddle age.

The basic disorder is an inflammatory process which could be traumatic, Infective or Idiopathic involving the tendon & its sheath in the Inter-tubercular groove. Condition is frequently over-looked by many orthopaedic surgeons, who do not consider it as a seperate entity. In their opinion It is only secondary to some other pathology of joint or rotators cuff & contributes little to the syndrome of painful & stiff shoulder Certainly many other lesions like cuff tear, calcium deposits can also cause a painful shoulder. No matter whether the tenosynovitis of tendon is primary or secondry, once tendon is involved, it is the major source of pain and lead's to muscle spasm & limitation of shoulder joint movements.

Robert K. Lipmaan was first to appreciate the role of tendon of long head of biceps in the causation of periarthrits or frozen shoulder. Lipmaan, Hitchcock & others, managed the cases by exploring surgically & anchoring the tendon of Biceps Long Head in the Bicipital groove.

With our rural back ground & non feasibility of surgical procedure we decided to block the pain pathway by steroid infiltration.

Procedure was done in Out Patient Department with full aseptic precaution one of the long acting steroid triamcinolone combined with Hylase was taken in a syringe and hylase dissolved in 1 c.c. of 2% xylocaine.

Biceps tendon was located in the Bicipital groove, by rolling It under the thumb which is markedly tender. Steriod preparation was Infiltrated over the Bicipital groove & tendon sheath both upwards & downwards.

Patients were examined again after 15 minutes and there was definite improvment in the range of movements & the pain was also reported to be less, patients were sent back with advise to have Exercises Regimen at home. Weekly followup was done.

CONCLUSION

It is to be concluded that blocking the painful point by steriod infiltration in the Bicipital groove followed by exercises regimen at home helps in early return of shoulder joint movements and treating at this stage the forth coming much disabling stage of frozen shoulder can be prevented,. If not treated at the synovitis stage condition will slowly but surely progress to the stage of maximum stifness of shoulder which may last from months to years

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Fig 1. Infiltrating the steroid after locating the bicipital tendon in the Bicipital groove

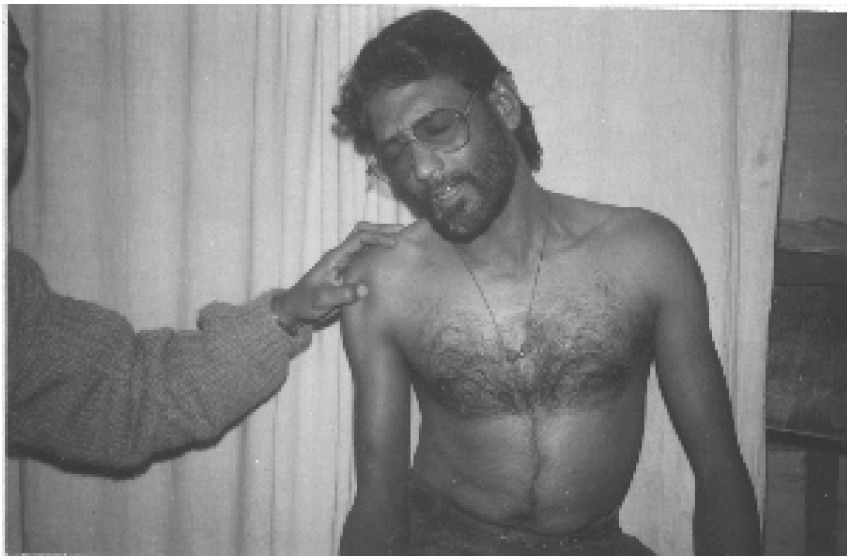

Fig 2. Locating the point of tenderness

ROLE OF FINE NEEDLE ASPIRATION CYTOLOGY AND PERIPHERAL ANGIOGRAPHY IN THE DIAGNOSIS OF NEOPLASMS OF THE EXTREMITIES

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Musculoskeletal tumours have remained a diagnostic dilemma inspite of all modern tools of investigations mainly due to their rarity i.e. less than 1% of all other Orthopaedic problems. Although their radiological features are well known, there is sufficient overlap in the radiological features at times to be nonconclusive. A final diagnosis is mandatory prior to any radical treatment in the form of open biopsy and histopathology but in bone tumours it takes time. With the development of chemotherapeutic treatment and surgical approach to the bone neoplasms certain specific information is required before treatment is started. The timing of treatment too is of critical importance for a good prognosis and so methods to diagnose these tumours early and accurately have to be searched. It is here that the role of FNAC and peripheral angiography comes into play.

MATERIAL AND METHOD

This study was conducted from July, 91 to September, 92. 19 cases presenting to the Department of Orthopaedics, Govt. Medical College, (N.S.C.B. Medical College) Jabalpur with suspected musculoskeletal tumours formed the material for this study. Following admission a thorough clinical and radiological examination of the patient with x-rays in two planes of the part and a chest x-rays and blood investigations were done. All cases with suspected musculoskeletal tumours were subjected to angiography/FNAC and open biopsy.

FNAC

The site of FNAC was chosen by examining the plain radiograph and angiogram of the patient if available. A site of cortical break with soft tissue infiltration and an area of reasonable vascularity was chosen for FNAC. The standard technique of Zajiecher of FNAC was followed. The biopsy site was cleaned with spirit and 5% povidone iodine. A 5 ml disposible syringe with a 22 gauge (0.7mm) needle was used to give the suction force after stretching the skin and introducing the needle perpendicular to the skin. The suction force was gradually released before withdrawing the needle. The aspirate was spread on a slide by pull apart technique and immediately dipped in a coplin jar containing 95% alcohol for wet fixation so

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that air drying artefacts are avoided. The slide is stained with eosin and hematoxylin and studied by a cytopathologist. The diagnostic criteria for malignancy in FNAC smears are cellularity, decreased cohesion, eosinophilic macro nuclei, loss of polarity, pleomorphism, nuclear pitting, irregularity of the nuclear membrane, clumped mitotic figures and anisonucleosis.

ANGIOGRAPHY

Angiography is always preceded by plain radiographs of the part. Angiography is performed under sedation with full aseptic precautions and preparation of site.

A Seldinger needle is used for femoral or axillary artery puncture. For femoral puncture, the thigh is kept in mild flexion, abduction and external rotation and a point 1" below the midinguinal point is used as a land mark. For the axillary artery, the arm is abducted 90° and rotated externally. The axillary artery lies between the pectoralis major and latissimus dorsi where it is identified by the pulsations and punctured.

20 ml of Conray 280 is injected under pressure through the Seldinger needle and serial exposure are made. This angiogram is studied for:

1) Neovascularity (Tumour vessel)
2) Tumour lakes (Pooling)
3) Tumour blush and stain
4) Rapid venous filling
5) Displacement of artery
6) Encroachment or occlusion of vasculature
7) Arteriovenosus shunts
8) Extra osseous component

Open Biopsy : This was performed on the standard or routine operation theatre turn after having planned the definitive surgical procedure.

Table 1. Fine needle aspiration of bone neoplasms

S.No.	FINAL DIAGNOSIS	TOTAL CASES	SATISFACTORY ASPIRATIONS	ASPIRATION DIAGNOSTIC	TISSUE OBTAINED BUT NOT DIAGNOSTIC	ASPIRATION INSUFFICIENT
1.	Osteosarcoma	6	4	3	1	2
2.	Osteoclastoma	3	3	2	1	-
3.	Chondrosarcoma	4	3	2	2	1
4.	Fibrosarcoma	1	1	-	1	-
5.	Ewing's Sarcoma	2	2	2	0	-
6.	Osteochondroma	1	-	-	-	*
7.	Soft Tissue Fibro Sarcoma	1	1	1	-	-
8.	Benign fibrous Histiocytoma	1	1	-	1	-
	Total	**19**	**15**	**10**	**6**	**3**

- No malignant tumour was called benign and vice versa.
- Only single aspirations were made.
- One case yielded no aspiration as dense cortical tissue could not be penetrated by the fine needle.

Table 2. Results of arteriography

TUMOUR		NO.	MALIGNANT	BENIGN	MALIGNANT CALLED BENIGN
1.	Osteogenic Sarcoma	6	6	-	-
2.	Osteoclastoma	3	3	1	-
3.	Fibrosarcoma	1	1	-	-
4.	Chondrosarcoma	3	3	-	-
5.	Ewing's Sarcoma	1	1	-	-
6.	Osteochondroma	1	-	1	-
7.	Soft Tissue Tumour	2	1	1	1*
	Total	17	14	3	1*

No benign tumour was called malignant.

* One malignant tumour was called benign. It was a soft tissue fibrosarcoma and was relatively avascular. In two cases arteriography could not be performed due to technical difficulty in one and the other patient absconding.

The Prediction of nature of Neoplasms was as follows:-

	FNAC		Angiography		Combined	
Malignant	13/16	81%**	12/14	86%*	16/16	100%
Benign	2/2	100%	3/3	100%	3/3	100%
Total	**15/18**	**83%**	**15/17**	**88%**	**19/19**	**100%**

** 3 FNA smears unsatisfactory - One aspirate was negative.

* 1 Soft tissue fibrosarcoma was called benign due to hypovascularity

1 Chondrosarcoma was hypovascular.

The specificity of diagnosis by FNAC was 55%

Malignant	9/16	56%
Benign	1/2	50%
Total	**10/18**	**55%**

The specificity of diagnosis by clinical, radiological and angiographic correlation was 15/19 i.e. 79%.

The specificity of diagnosis improved by 10% by clinical, radiological, arteriograph and FNAC examination and was 17/19 (89%).

Only in 2 cases i.e. 11% cases an open biopsy was actually required to reach a confident diagnosis.

OBSERVATION AND RESULTS

Table 3. Discussion needle biopsy results in literature

WORKS		NEEDLE SIZE	OVERALL ACCURACY%
1.	AGRAWAL & WAHAL	18 20G	82
2.	AKERMAN	0.8 mm	80
3.	COLEY	18 G	94
4.	de SANTOS	23 G to Trephine	93
5.	ELKHOURY	22 G	88
6.	FELDMAN & CORELL	FNA	51
7.	HAJDU & MELAMED	18 G	NA
8.	JAMES & FRABLE	22 G	99
9.	MARTING & ELLIS	18 G	NA
10.	MITTAL	12-13G	92
11.	MURPHY et at	18 G & Trephine	94
12.	OTTOLENGHIE	2 mm	84
13.	SCHAJOWICI & HOKAMA	2 mm	74
14.	SNYDER & COLEY	18 G	69
15.	STORMBY & AKERMAN	0.6mm	67
16.	THOMMESEN & FREDERIKSON	0.6 mm	83
17.	PRESENT SERIES	22 G (0.7 mm)	83%

DISCUSSION

Musculoskeletal tumours are well documented in world literature and our series of 19 cases too, correlated well to it in regards to age group, incidence and skeletal distribution (Table 3).

Needle biopsy results in world literature:

Reviewing the results of FNAC and CNB it is evident from the above tables that most of the workers have used wide bore needles and trephines to obtain- core of tissue which was subjected to examination by cytology and histopathology. Only a few have used fine needles for aspiration but the results of both are comparable. Using FNAC all the dangers and technical difficulties of CNB can be obviated. CNB is useful when the cortex is intact and the sample had to be obtained from the intraosseous portion, i.e. corticomedullary region which is not possible with a fine needle.

The hazards of diagnosis by needle biopsy are due to sampling errors, scant material and therefore the diagnosis should be made in light of clinico-radiological information and one should resort to open biopsy when the clinical, radiological and cytological opinions are in disagreement.

Details are well seen on FNA smears for diagnosis of neoplasms provided a competent and experienced cytopathologist is examining the smears. It is difficult to diagnose type of tumour on FNAC due to

Fig 1. Fibrosarcoma upper end of tibia.

Fig 2. Angiography of same case shows uniformly distributed moderate neovascularization.

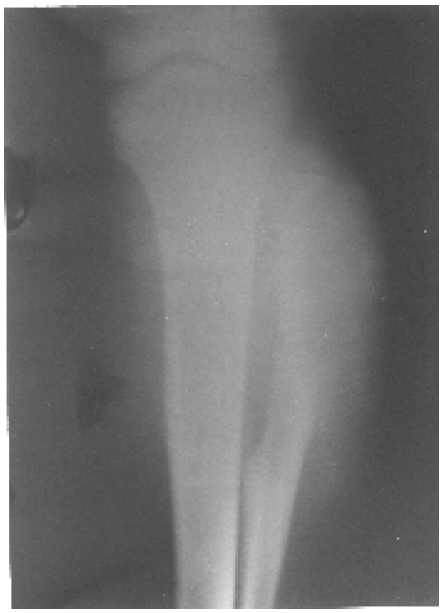

Fig 3. Ewing's Sarcoma with involvement of tibia.

Fig 4. Arterial phase angiogram of the same case shows neovascularity and rapid filling.

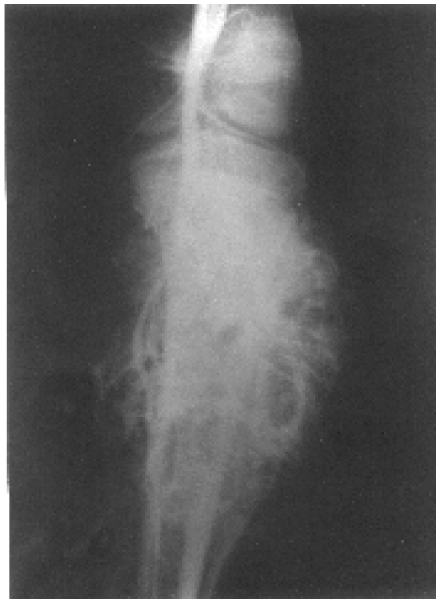

Fig 5. Angiogram of venous phase shows A-V fistula immediately distal to origin of posterior tibial artery.

Fig 6. Angiogram of capillary phase shows dense tumourous stain.

poor cellularity. An open biopsy becomes mandatory if:

1) FNAC fails to provide a diagnosis.
2) Clinico radiological impression is not agreeable with cytology.
3) No soft tissue component is present to enable FNA (five needle aspiration).

Features pathognanomic of malignancy on angiography are neovascularity, venous pooling, A.V. Fistula and occlusion of vasculature, highly vascular tumours are more malignant and behave aggressively like osteosarcoma and Ewing's sarcoma. It is imperative for one to resort to open biopsy in a few border line cases where a combined effort of clinico radiological, angiography and FNAC has failed to get a fruitful result.

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MUSCULOSKELETAL TUMOURS : AN EVALUATION AND RETROSPECTIVE STUDY

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ABSTRACT

An evaluation of musculoskeletal tumours in the Department of Orthopaedics, Pt. J.N.M. Medical College and D.K. Hospital, Raipur was carried out with a retrospective study of 5 years (1988-92). The incidence of various musculoskeletal tumours, comparison of the different modalities of their treatment and a follow-up study of the result of surgery and prognosis was studied.

The incidence of musculoskeletal tumours was found to be 0.15% of the total OPD attendance. The study mainly comprised of Primary musculoskeletal tumours. The incidence of malignant tumours was found to be twice to that of benign tumours. Secondary tumours with an incidence of 7.69% were not a major part of musculoskeletal tumours in our study. The overall sex distribution of musculoskeletal tumours with 69 males and 62 females out of the 131 tumours was statistically not significant.

The study helped us to analyse the incidence, management and prognosis of musculoskeletal tumours, to compare them with the many studies published on individual tumours and to make us have a better understanding of the subject.

INTRODUCTION

The evaluation and treatment of bone tumours is a crucial part in the core of Orthopaedics. The subject of bone tumours is confusing because there have been controversies between pathologists, radiologists and clinicians to agree upon a generally acceptable terminology. While certain primary lesions may be rare or uncommon, others are not and bone tumours and tumour like conditions are not just academic subjects. A team consisting of a surgeon, radiologist, pathologist and often a medical oncologist and radiotherapist is necessary to treat the spectrum of tumours involving the extremities and spine.

MATERIALS AND METHODS

A retrospective study was done in the Deptt. of Orthopaedics, D.K. Hospital Raipur of patients suffering from musculoskeletal tumours who presented to us as OPD or emergency cases either for the first time or for follow-up during a period of 5 years (1988-1992).

The case records of the patients coming from 1988-91were taken out and

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the patients coming in 1992 were recorded in the following manner:

i) Clinical diagnosis determination:

ii) Radiological diagnosis determination;

iii) Histopathological diagnosis determination.

In the clinical diagnosis the patients age, sex, bone involved, part of bone involved, complaints with duration and mode of onset, progression and a complete local and general examination was recorded.

In the radiological diagnosis at least two radiographs at 90° to each other of the part involved were taken. Skeletal Survey were carried out in appropriate cases. C.T. Scan too was done of the patients who could afford it.

Histopathological diagnosis was done by both cytology and biopsy techniques. The techniques were fine needle aspiration biopsy cytology, core biopsy, open incisional biopsy and excisional biopsy as and when required.

Biochemical analysis of blood and urine was done as and when it was considered appropriate. The management of the tumours was found to be done in the following manner.

1. Conservative : patients kept under observation as in the cases of benign tumours and symptomatic and supportive treatment in terminally ill patients. Adjuvent treatment in the form of radiotherapy and chemotherapy too were given preoperatively or following surgery in malignant bone tumours.
2. Operative : Depending on the type of tumour and its size and extent of involvement the following operations were found to have been done.

- Excision
- Excision with reconstruction
- Curettage with grafting
- Amputation
- Dis-articulation

The follow-up of the patients was done by giving them instructions at the time of discharge for follow-up as well as by sending them reply paid post cards with instructions to either come for follow-up or to write their present condition.

The clinical findings were recorded in details, radiographs were taken of chest and of the part in question and further treatment instituted depending on the patients present condition on follow-up.

RESULT

Out of the total 131 cases with musculoskeletal tumours, we treated 73 cases operatively, 23 cases were kept under observation or treated conservatively, 24 cases were referred to the department of cancer for adjuvent radiotherapy/ chemotherapy or both as shown in table No.(8) 32 cases were either discharged on request or absconded while 27 cases were lost for follow-up.

4 cases expired during this period of 5 years.

We could do the follow-up of 48 cases out of which 21 cases were under observation and with no evident disease till the end of this study. 15 cases had recurrence out of which 3 cases were amputated, 18 cases were referrred to the Department of Cancer for radiotherapy or chemotherapy, one case declined any further treatment while the same operative procedure was repeated in 3 cases.

Table 1. Incidence of bone tumours in the Dept. of Orthopaedics, D.K. Hospital, Raipur M.P. : 1988-1992.

Year	Total No. of new cases registered	No. of bone Tumours.	% incidence of Bone tumours
1988	16,359	14	0.0855
1989	18,472	14	0.0757
1990	17,023	26	0.1527
1991	19,072	24	0.1258
1992	15,849	53	0.3344
TOTAL	**86,775**	**131**	**0.1509%**

Table 2. Incidence of the Different Musculoskeletal tumours in the Department of Orthopaedics, D.K. Hospital, Raipur M.P. (1988-1992)

No.	Tumours	Male	Female	Total	% of tumour
1.	Osteosarcoma	14	10	24	18.32
2.	Fibro Sarcoma	2	4	6	4.58
3.	Chondrosarcoma	3	6	9	6.87
4.	Ewing's Sarcoma	5	2	7	5.34
5.	Multiple Myeloma	2	0	2	1.52
6.	Secondary tumours	5	5	10	7.63
7.	Osteoclastoma	7	12	19	14.5
8.	Osteochondroma	12	3	15	11.45
9.	Enchondroma	1	2	3	2.29
10.	Simple bone cyst	2	1	3	2.29
11.	Aneurysmal bone cyst	1	2	3	2.29
12.	Fibrous dysplasia	4	4	8	6.10
13.	Other tumours	11	11	22	16.79
	TOTAL	**69**	**62**	**131**	**100%**

Table 3. Incidence of benign and malignant tumours

Tumour	No. of cases	% of cases
Benign Tumour	44	33.58
Malignant Tumour	87	66.41
TOTAL	**131**	**100%**

Table 4. Distribution in age of different muscloskeletal tumours

Total No. of cases	TUMOUR	Age Distribution 0-10	11-20 yrs.	21-30 yrs.	31-40 yrs.	41-50 yrs.	51-60 yrs.	61& Above
24	Osteosarcoma	-	12	8	2	1	1	-
6	Fibrosarcoma	-	1	2	-	1	1	1
9	Chondrosarcoma	-	3	3	4	0	1	1
7	Ewing's sarcoma	-	5	2	-	-	-	-
19	Osteoclastoma	-	-	14	4	0	1	-
15	Osteochondroma	4	7	3	1	-	-	-
8	Fibrous dysplasia	3	4	1	-	-	-	-
12	Secondary Tumour	0	2	-	5	-	5	-
3	Aneurysmal bone cyst.	-	1	2	-	-	-	
3	Simple bone cyst	-	1	2	-	-	-	-
3	Enchondroma	-	1	2	-	-	-	-
26	Others	3	10	4	6	-	2	1

Table 5. Bones involved by different tumours

TUMOUR	BONES INVOLVED																		
	Distal Femur	Proximal Femur	Femoral Diaphysis	Proximal Tibia	Scapula	Fibula	Ulna	Soft tissue involvement	Pelvis	Diaphysis Tibia	Patella	Sternum	Radius	Humerus	Clavicle	Phalynx/metacarpal	Spine	Ribs/Skull	Total
Osteosarcoma	9	2	1	10	1	1	-	-	-	-	-	-	-	-	-	-	-	-	24
Fibrosarcoma	1	1	-	-	-	-	1	-	-	-	-	-	--	-	-	-	-	-	6
Chondrosarcoma	2	1	-	1	1	-	-	-	4	-	-	-	-	-	-	-	-	-	9
Ewing'ssarcoma	-	-	3	-	1	-	1	-	-	2	-	-	-	-	-	-	-	-	7
Osteoclastoma	5	2	1	2	-	-	1	-	-	-	2	2	3	1	-	-	-	-	19
Osteochondroma	4	-	-	6	3	2	-	-	-	-	-	-	3	4	2	1	-	-	25
Fibrous dysplasia	3	-	1	-	1	-	-	-	1	-	-	-	-	-	1	1	-	-	8
Sec. Tumours	-	4	-	-	-	-	-	3	-	-	-	-	-	2	-	-	3	3	15
Others	-	4	-	1	-	-	-	1	2	-	-	-	1	1	1	3	3	1	18

Table 6. Tumours giving secondaries to bone

Tumrs	No. of Cases	% of cases
Ca Prostate	2	16.6
Ca Breast	3	25.1
Neuroblastoma	1	8.3
Adenocarcinoma	1	8.3
Sq. Cell Ca	1	8.3
Occult.	3	16.6
Ewing's sarcoma	1	8.3
TOTAL	**12**	**100%**

Table 7. Management of different musculoskeletal tumours with followup

TUMOURS	MANAGEMENT														
	Disarticulation	Amputation	Refd. for Radio/chemo therapy	DOR/LAMA/Absconded	Under Observation	Excision	Excision & reconstn.	Curettage with grafting	Total follow-up	No evident disease.	Expired	Recurrance	Lost for follow-up	Re-surgery	Refd. for Radio/Chemo Therapy
Osteosarcoma	2	8	3	11	-	-	-	-	5	1	1	2	19	-	2
Chondrosarcoma	-	1	2	1	1	-	2	-	2	-	1	2	3	1	-
Ewing's Sarcoma	-	1	6	-	-	-	-	-	1	1	-	-	-	-	-
Fibrosarcoma	-	1	-	1	1	3	-	-	2	1	-	1	-	1	-
Osteochondroma	-	-	-	-	6	9	-	-	6	6	-	-	9	-	-
Osteoclastoma	-	1	-	1	1	5	4	7	13	7	-	4	1	1	4
Fibrous Dysplasia	-	-	-	-	2	1	-	5	6	6	-	1	2	-	-
Sec. Tumours	-	-	1	-	8	-	1	-	5	2	2	-	1	-	1
Other Tumour	-	2	4	4	4	13	2	5	13	7	-	5	14	3	3

Table 8. Incidence and Management of Musculoskeletal Tumours in the Department of Orthopaedics, D.K. Hospital Raipur (M.P.) 1988-1992:

No.	TITLE	No. of Cases
1.	Total cases	131
2.	Operative Treatment	73
3.	Under observation	21
4.	Referred to Dept. of Cancer	24
5.	LAMA, DOR, Absconded	32
6.	Lost to follow-up	27
7.	Expired	4
8.	Follow-up	48
9.	Recurrance	15
10.	No evident disease	21
11.	Follow-up of Recurrance:	
	Amputation	3
	Re-surgery	3
	Referred to Dept. of Cancer	8
	LAMA	1

DISCUSSION

Musculoskeletal tumours form a very small part of the scope of Orthopaedics. In our series out of the 86775 patients registered only 131 cases were of musculoskeletal tumours, the percentage being 0.15%.

Osteogenic sarcoma is described as the most common primary bone tumour. Bernard Ghelman (1989) gives the incidence of primary osteogenic sarcoma as 25% and of Ewing's sarcoma as 10% of all malignant bone tumours. Osteogenic sarcoma was found to be the most common primary bone tumour in our series also.

Archie J. Malcolm (1985) describes osteogenic sarcoma to occour in two major groups.:

1. Adolescents and adults upto 25 years.
2. Individuals above 50 years of age. He describes chondrosarcoma to occur more commonly between 35 and 55 years osteochondroma to be more common between 11 to 30 years, Osteoid osteoma to occur between 5 years to 30 years and Chordoma to occur between 30 years and 50 years.

Bernard Ghelman describes fibro sarcoma to occur between 2nd to fifth decade and osteoclastoma to occur in young adults after epiphyseal fusion.

Archie J. Malcolm gives the sex ratio of osteogenic sarcoma as 3M:2F, of Fibrosarcoma as 1M:1F, of chondosarcoma as 1M:1F, of Ewing's sarcoma as 3M:2F and of osteoclastoma as 2M:3F.

The age and sex distribution of the various bone tumours in our series are comparable to these data as seen in

Table 2 and 4 respectively.

The skeletal distribution of osteogenic sarcoma was found to be most common in distal femur, proximal tibia and proximal humerus by both Bernard Ghelman and Archie J. Malcolm. Chondrosarcoma is described to be most common in pelvis, Fibrosarcoma to be common in distal femur, Ewing's sarcoma to be common in distal femur and pelvis, Osteoclastoma to be common in distal femur and proximal tibia and Osteochondroma to be more common in femur by Archie J. Malcolm.

Bernard Ghelman describes Aneurysmal bonecyst to be present in long bones in 50% cases, 30% being in vertebral arch and 18% in flat and short bones. Simple bone cyst is described by him to occur at the proximal humerus in 55% cases and Enchondroma to occur 50% in short tubular bones. Our results too are comparable to these figures as seen in Table No. 5.

The management of osteogenic sarcoma by amputation alone without adjuvent therapy leads to early metastasis in 50% of cases with death within 6 months according to Sutow W W 1971 and Sweetnam R 1971. Jaffe gives the 5 years survival rate between 5-23% with or without metastatic disease. Campanacci M and Laus M 1980 give the current local recurrence rates following limb sparing surgery for osteogenic sarcoma as 5% where done alongwith chemotherapy, radiotherapy and pulmonary resection off large deposits.

Chondrosarcoma's are treated by wide, local radical, resection or amputation depending on their site. The rate of local recurrance is primarily dependent on the adequacy of the initial surgical therapy. Fibrosarcoma's are highly malignant tumours and amputation is thought to be the only hope.

Ralph, Rosen and Marcove (1980) have tried local radiation followed by radical enblock resection alongwith adjuvant chemotherapy in 27 cases of Ewing's sarcoma and have shown the dose of radiotherapy to be reduced in this manner. The treatment of giant cell tumours of the extremity involves intra lesional excision with cauterization by phenol, PMMA, or liquid nitrogen. We have treated our cases on the above lines only as can be seen in Table No. 7 and our results have been comparable to these studies. In our study out of the 131 patients with musculoskeletal tumours we could get the follow-up of only 48 patients which is quite less. The follow-up of these patients in our region was difficult as:

1. Patients with malignant tumour knowing their fate did not come for follow-up.
2. Poverty made the patients non compliant to follow-up;
3. Inaccessibility of the region due to lack of transport facilities made it difficult for the patients to come for follow-up.
4. Patients referred for adjuvant treatment to higher centres or the Deptt. of Cancer were lost to follow-up later on.
5. A poor registration system with incomplete postal address in the record made it difficult to trace the patients.

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10 YEAR OLD NEGLECTED MONTEGGIA FRACTURE-DISLOCATION A CASE REPORT

*Sanjeev Banerjee

ABSTRACT

A patient presented 10 years after sustaining Montaggia fracture dislocation, posing a unique problem. There was gross overriding of proximal radius with Gap-nonunion of ulna. It was treated with proximal radial shortening and fixation of ulna using excised fragment as a free graft to fill the gap non union. The limb was restored to full functional status.

INTRODUCTION

Acute Monteggia Fracture Dislocation Are well treated with open reduction and stable fixation of Ulna. Radial, head reduces spontaneously or rarely may require open reduction. The case described reported 10 years after sustaining injury and posed a unique challenge. The treatment and outcome are discussed herewith.

CASE REPORT

A forty year old male presented with history of sustaining injury to forearm and elbow. He received treatment in the form of reduction and plastering but abandoned the treatment one month later on his own. Subseqently he resumed his job as a cook and was manging somehow. He had inability to lift weights and do heavy work.

On examination the hand and wrist functions were good with a good grip. There was frank mobility at Ulnar fracture site without any pain. The radial head could be felt well proximal to the elbow anteriorly. The active R O M was 30^0 -90^0 but the forearm was flail and patient could not lift any weight. There was a complex movement at the humero-ulnar joint as well as the pseudo arthrosis site. On flexion the radial head jutted against the humerus and blocked flexion. There was no neurological deficit. No active supination pronation was possible. X-Ray showed radial head dislocation with gross proximal overriding and gap nonunion of ulna.

In planning the treatment, there were two major objectives. One was to remove the upper end of the radius which was blocking the movements and the second was to treat the gap nonunion of Ulna. I calculated that on exicising the upper end of radius distal to the elbow, the bone excised would be long enough to fill the gap in Ulna and being the metaphysio-epiphseal area would be richly cancellous.

Using a single posterior approach the upper end of radius was exposed the posterior interosseous nerve was identified

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and isolated. The radius was osteotomized distal to the elbow joint. Ulna was exposed-pseudoarthrosis excised. The upper Radius was sculptured to fill in the gap. Fixation was done using 8-hole 3.5 mm D C P with 3 proximal, 3 distal and 2 screws into the graft. Cancellous grafts taken from the iliac crest were also packed.

Post operatively a posterior slab was given for a week and then active mobilization started. Within 12 weeks the fracture united and patient had full flexion-extension and near normal supination and pronation.

Fig 1. Initial X-ray

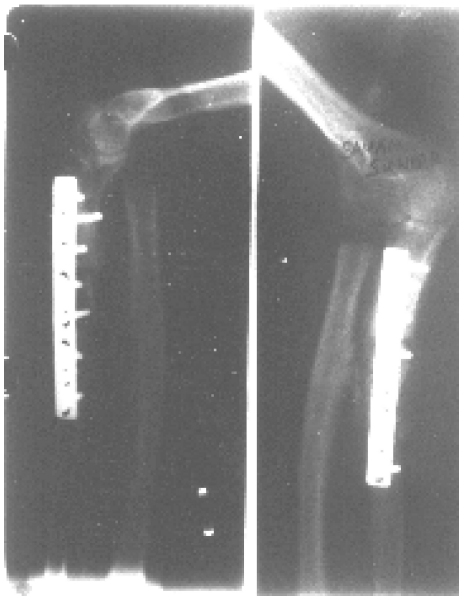

Fig 2. X-ray after six weeks showing progressive union

Fig 3. Final clinical result showing full flexion-extension and supination-pronation

ISOLATED BILATERAL TUBERCULAR OSTEOMYELITIS OF CALCANEUM

A CASE REPORT

* Dr. H.S. Varma **Dr. Alok C. Agrawal ***Dr. Gaurav Govil ***Dr. Rajesh Bhargav

ABSTRACT

A 6 year old male child presenting with swelling of both heels and discharging sinuses is reported. Biopsy of the curretted material from both lesions revealed tuberculus nature. Patient has been kept on conservative treatment and antitubercular drugs.

INTRODUCTION

Isolated Tubercular osteomyelitis of calcaneum is a rare entity and has been reported scarcely. The stress on study of calcaneal tuberculosis gets diluted by the fact that most of the cases with tuberculosis of the foot involve more than one bone and joint of this region.

CASE REOPORT

A 6 year old male child presented at the Department of Orthopaedics, Medical College Jabalpur, with swelling and a dischrging sinus in both the heels for a duration of three months. This child had been previously examined at a Primary Health Centre and Incision and Drainage was done on the right side. Since his condition did not improve he was refered to this hospital.

He had swelling of both the heels since 4 months and discharging sinuses over both heels since 3 months.

The swelling involved the heel region initially for about a month and was associated with pain which later subsided. Constitutional symptoms in the form of night sweats and evening rise of temperature were present.

Physical examination revealed his temperature to be 97.40^0 F, pulse 108/min, respiratory rate-24/min mild pallor, body weight 15 kg. and inguinal lymphnodes enlarged on both sides.

Both his feet had swelling in the region with discharging sinus laterally, The discharge was serosanguinous in nature.

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The swellings were diffuse over both the heels more on the lateral and posterior aspects below and behind the lateral malleoli, of size about 5 cm X 3 cm. X 1 cm, with skin discolouration.

Movements of both ankles were free while inversion was restricted and eversion absent.

Radiographs revealed central osteolytic lesions in both calcanei of size about 1.5 cm. X 1 cm., (Figure 3), with marginal sclerosis and osteoporosis of whole calcanei. Laboratory data included, hemoglobin 10 gm.%, total leucocyte count 9,600 mm3 with 62% polymorphonuclear cells, 36% lymphocytes and 2% eosinophils. His ESR was 50 mm/at the end of one hour and his urinalysis was normal.

Biopsy taken through both sinus tracts with the help of a thin currette revealed the diagnosis of tuberculosis.

Treatment consisted of chemotherapy with Rifampicin 10 mg./kg. body weight once daily empty stomach, Isoniazed 5 mg./ kg. weight once dialy, Ethambutol 25mg./kg. body weight once daily and pyrazinamide 35 mg/kg body weight in two divided doses. A regular vitamin "B" complex supplementation too was prescribed. Patient was discharged with advise for bed rest and follow up every month to see his progress, clinically and radiogically. The patient was given below knee POP slab for six weeks.

DISCUSSION

Tuli (1991) reports 1% to 3% incidence of osteoarticular involvement of all the tuberculosis cases. In his series of 980 patients 3.26% cases with involvement of calcaneum, however, he has not distinguished how many of them were involving calcaneum alone and how many had other bones and joints involved too.

Wilkinson (1964) states that tuberculosis does not distinguish different joints and bones forming the foot and usually affects several of them. He further states that in infants it mainly involves metatarsals, in children tarsal bones; While ankle becomes more susceptible as the ossification advances.

Bosworth (1959) states that in bones the pathology of tubercular affection is the same as that in diaphysis of long bones i.e. expansive central lesion due to slow development of the disease and relative softness of cortical structures in children. He has given an account of histological picture with typical grannuloma formation with epitheloid cells and giant cells. Coagulative necrosis occurs in giant cells and their coalscence with other similar lesions form caseous necrotic centre gradually increases in size with endarteritis and periarteritis of the vascular structures coursing through that area-Denervation of the area occurs due to perineural fibrosis, by compression, destruction and lysis of the neural structures, as well as by stripping of nerves from osseous and joint structures.

Shannon (1990) writes that in adults skeletal tuberculosis involves spine in 50% cases, hip 15% and ankle, wrist, elbow and others in 20% cases. He also quotes report of the American Academy of Paediatrics which says that resistance to Isoniazed is 15% in south east Asia. A third drug is therefore recommended in the first two months.

Tuli (1991) advocates at least 1 month of drug therapy and general treatment before any major surgery is done. Anti-tubercular drugs in their doses according to

body weight of the patients could be followed by appropriate surgery if it seems necessary.

In this institution we use four drugs up to 2 months. and 2 drugs for the next 10 months. Dose is to be calculated according to the body weight of the patient and in child has to be reviewed follow-up with weight measurement, complete haemogram & ESR. An X-ray after every 3 months is also required. Surgery can be planned after 1 month of anti-tubercular treatment and after assessing the patient for any clinical or radiogical improvement.

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Fig 1. Bilateral TuberculousOsteomyelitis of Sinus on left foot

Fig 2. Bilateral TuberculousOsteomyelitis of Sinus on Right foot

Fig 3. Bilateral TuberculousOsteomyelitis of a & b

Lateral views of both levels showing osteolytic lesions in calcaneum

AN UNUSUAL PRESENTATION OF OSTEOLYTIC LESION IN DORSAL VERTEBRA - A CASE REPORT

*Dr. S.K. Lunawat

CASE REPORT

A 32 years old male came to us on 6.9.98 with complaints of severe pain in dorsal region and girdle pains for 2-1/2 months. He also had low grade intermittent fever, constipation, and gradual incontinence of urine. He was able to walk with support. There was no H/o trauma, cough or other chronic illness. He was investigated and treated outside since 2 months. Clinically the patient had gibbus at D6 and tenderness from D5 - D8. His neurological examination showed upper motor neuron type of paraparesis with sustained ankle clonus and plantars up going. Sensory system was normal, but sphincters were involved.

His investigations showed raised ESR (52), Blood Sugar-88mg.% Hb 11 gm. %, Total Count 10,100/cmm, alkaline phosphakse 382 IU.

Total Protein 7.3 gm.% with A: G ratio 1 : 1.25 (A-3.25 G-4.05)

Serum Electrophoresis - Alpha-1 Gb 0.2 gm%, Alpha-2 Gb 0.8%, Beta Gb 1.5 gm% X-ray D-L spine showed destruction, Osteolytic Collapse of D6 vertebra

Chest X-ray- Multiple Osteolytic areas in the ribs

X-ray Pelvis & Skull - Multiple Osteolytic areas.

CT scan showed

(1) Multiple Osteolytic lesions in the vertebrae and ribs.

(2) A right paraspinal soft tissue shadow at D1 D2 level.

(3) A Bilateral paraspinal soft tissue shadow with epidural component compressing the cord at D6 & this appearances are suggestive of multiple myeloma.

Urine

(1) WNL

(2) B.J. proteins-negative.

Bone marrow Biopsy from sternum-Normal.

Work up for thyroid functions within normal limits.

In the hospital, he had sudden onset paraplegia with hypoaesthesia at D7. Based on clinical findings & investigations he was operated on 21.9.98 and an anterior decompression by transthoracic retro-pleural approach was done. Patient had massive bleeding and intra-operatively it looked a malignant lesion. The whole body of vertebra was destroyed, was curetted

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and decompression done upto the spinal cord. To stop bleeding a pack had to be kept which was removed after 36 hours. Post operatively no improvement in neurology occurred. Histopathology report from two sources, to our utter surprise didn't show any pathological lesion. Again his haematological work up was done but with no conclusion. On 5th postoperative day, he developed a sudden swelling over the Rt. Sterno-clavicular junction which was tender and non fluctuant.

As we could not reach a diagnosis after surgery and other investigations it was decided to have another biopsy from this clavicular swelling and ultimately histology from this swelling showed secondaries from an oat cell carcinoma. Patient was referrred to oncologist who then opined that considering osteolytic secondaries in the vertebrae, skull, pelvis, ribs from oat cell carcinoma, he should be given radio-therapy and chemotherapy. After 3 weeks of this treatment patient did not show any improvement and on the contrary deteriorated. He could not be traced further.

DISCUSSION

In young adults multiple osteolytic lesions are usually multiple myeloma, Eosinophilic granuloma, LE disease, fibrous dysplasia, Secondaries, Leukemias etc. These diseases are usually diagnosed on investigations and histo-pathological examination. This patient clinically seemed to have multiple myeloma but histopathologically didn't show any pathological lesion, which puzzled us to think over in terms of hyperparathyroidism which also was not there. We thought of getting his MRI done but in the mean time he suddenly developed a swelling at the sterno-clavicular junction, biopsy of which ultimately proved to be secondaries from an Oat Cell Carcinoma.

On going through the literature no reference of this nature was available at internet. In the Text book of pathology (Robbins) reference to Oat cell sub type of Bronchogenic Carcinoma or Small Cell Carcinoma has been described which tends to spread in all directions. The cells are comprised of small, dark lymphocytes like cells having scant cytoplasm and hyperchromatic nuclei with numerous mitosis.

Involvement of lymph nodes about carina, mediastinum, neck (Scalene nodes) and supraclavicular region eventually with distant metastasis to liver, adrenals, brain and bone occurs. Biopsy of Scalene nodes or supraclavicular nodes is performed for diagnosis which was done in our patient. They also have hypercalcemia which is related in part to osteolytic bone metastasis but more to the elaboration of Parathormone and other Calcium metabolizing products. 5 years survival varies from 5-10%.

CONCLUSION

This patient showed a very unusual presentation of Multiple Osteolytic Lesion in Vertebra, Pelvis and Skull, diagnosis of which proved to be a good academic exercise.

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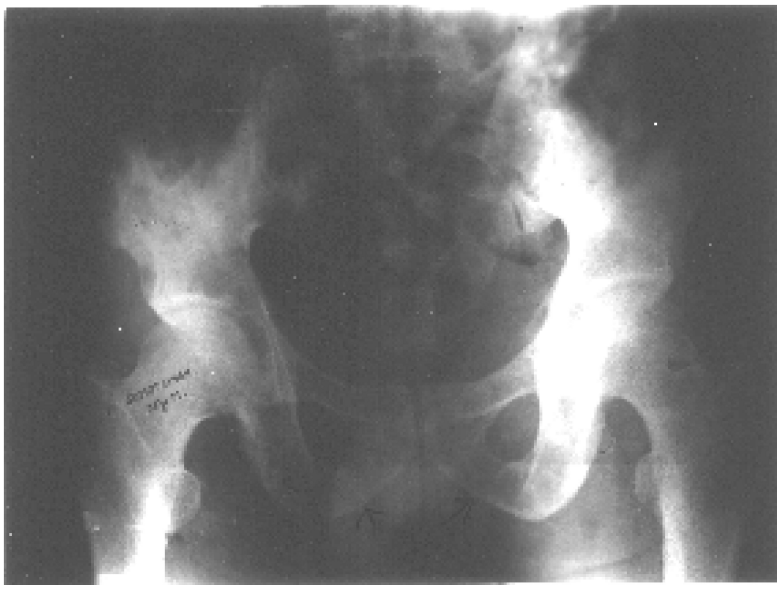

Fig 1. X-ray pelvis showing multiple osteolytic areas

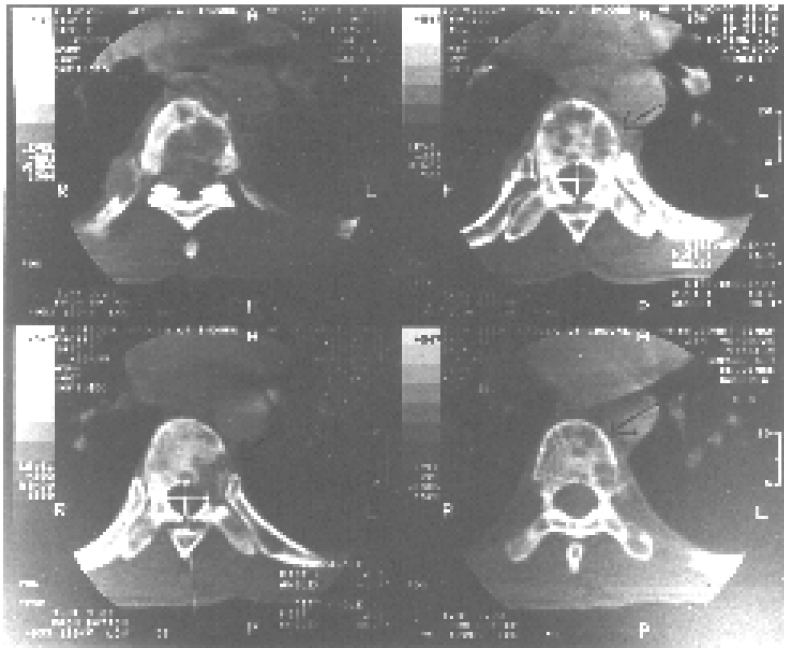

Fig 2. CT Scan showing multiple osteolytic area in vertibral bodies

EVALUATION OF THE BIPOLAR HIP RELACEMENT IN FRACTURE NECK FEMUR

* Dr. K.D. Tripathi ** Prof. A.N. Verma

ABSTRACT

Bipolar hip hemiathroplasty was performed in 100 homogenous patient of fracture neck femur ranging 40-82 years of age. 52% patient had transcervical fracture, 28% had basal fracture and 20% had subcapital type of fracture Talwalkar's bipolar hip prosthesis was used and results were evaluated according to Harris Hip score.

Patient were followed upto 2 years, 81.25% patient had good to excellent results, 12.5% patient had fair result. Two patient had superficial wound sepsis one had deep wound sepsis. No patient had deep vein thrombosis, disassembly or sinking of prosthesis. No case had implant failure.

INTRODUCTION

Bipolar prosthesis was developed as an "alternative" to the endoprosthesis of Austin Moore and Thompson's. Its aim was to reduce the friction and impact of forces at the prosthetic head acetabular cartilage interface by interposing a movable cup lined by ultra high molecular weight polyethylene.

Free motion of cup allows it to align with rotational axis of the acetabulum. The femoral stem head in turn permits stabilization by having an independent center of rotation in relation to the cup. The UHMWPE liner provides low friction bearing and also acts as a shock absorber to the joint.

This procedure which is accepted as an immediate step between hemiarthroplasty and total hip replacement was done without using any cement. The advantage of cementless arthroplasty were dual, firstly the time cosummed in surgery was less, and there were no side effects of cement; secondly, it leaves scope for revisability.

So now bipolar prosthesis is being used very widely in fractures of femoral neck and in some cases of nonunions of femoral neck. In this study we have evaluated the results of press fit. Talwalkers bipolar hip prosthesis in elderly patients by using Harris Hip Score.

MATERIALS AND METHODS

The study has been conducted in the

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deptt. of Orthopeadis MLN Medical College, Allahabad during a period of 7 years from June 1992 till September, 1999, randomly selecting 100 patients of femoral neck fracture with a mean age of 65 years. Preoperative assessment of fracture were done on X-ray and size of prosthesis were predicted by templates.

In all of our cases, we used Moore's approach. After opening the joint, the hip was dislocated posteriorly and neck was osteotomised. The angle of osteotomy was 45^0-50^0. Then reaming of the medullary canal was done. Before reaming it is important to remove sufficient bone laterally to avoid the penetration of lateral femoral certex. After reaming the femoral prosthesis is put and reduction is performed. At the time of reduction the hip in taken through its range of motion to be sure that impingement or tendency to dislocation or subluxation does not occur.

After reduction the wound is closed with suction drain after reinforcing the capsule.

Patients were transferred from the operating table directly to hospital bed where both lower limbs were secured in abduction. Antero-posterior roentgenograms were made routinely after transfer to confirm the proper location of prosthesis. All patients were maintained with the lower limbs in abduction in bed for three to five days after operation and then were advanced to protected weight bearing as soon as tolerated.

OBSERVATION

AGE AND SEX DISTRIBUTED

In our series of 100 cases, there were 36 males and 64 females, ranging from 40-82 years of age. The youngest patient was of fresh transcervical fracture and oldest was 9 months old transcervical fracture. The maximum number of cases were in age group of 61-70 years (39.3%).

PRE-OPERATIVE FINDING ON RADIOGRAPH

Out of 100 patients of fracture neck femur, 52% patients had transcervical and 28% basal type & 20% were of subcapital type fracture. 42 fractures out of 100 cases presented as a fresh fracture, that is the maximum number, longest duration of fracture was of 9 month old. (Table 1).

PERIOD OF HOSPITALIZATION

The majority of patients could be discharged in third week. One patient stayed in hospital for maximum time (7 weeks), who has deep infection. She was on antibiotics and advised removal of prosthesis but she did not turn up for removal. The average period of hospitalization was 3.6 weeks.

SIZE OF PROSTHESIS

Talwalkar's bipolar hip prosthesis available in the market from 39 mm-51 in size. That is all in odd numbers. In our cases 43 & 45 mm sizes were used maximum in 68% cases. (Table-2)

FOLOW-UP

Minimum period of follow up was 3 mths and maximum period was 2 years.

EVALUATION OF PATIENTS

The patients were evaluated in the form of pain, function, motion and absence of defermity at every follow up (at 3 months 1 yr. and 2 yr.). We have used the Harris

Hip Score to evaluate the hips. According to this system results were tabulated. (Table 3). In our study, 81.25% of patients had good to excellent results. 12.5% of patient had fair results.

COMPLICATIONS

There was no complication during operative period. 2 patient has superficial wound sepsis. 1 patient has deep wound sepsis and no patients has deep vein thrombosis. One patient had dislocation which was immediately reduced under anasthesis. No patient had disassembly or sinking of prosthesis. No case had implant failure.

RADIOLOGICAL ASSESSMENT

We have taken immediate post-operative radiograph and subsequent serial radiographs. The movements of hip joints was studied with abduction and adduction roentgenograms. We have not encountered medial migration, vertical migration of acetabular component, dislocation disassembly of prosthesis. Till this date we have not seen acatabular erosion (Protusio acetabuli) and loosening of stem also.

DISCUSSION

The bipolar hip prosthesis, which was introduced by Giliberty and by Bateman in 1974, has been accepted for treatment of fractures of femoral neck. In our study, we have used Talwalkar type of bipolar hip prosthesis. The design of this bipolar prosthesis is attractive for several reasons. Motion at its inner metal-on-polyethylene bearing potentially reduces shear stress on the acetabular cartilage, its double bearing surfaces allow a potentially greater range of movement of the hip.

Our study has a short term, follow up of 100 homogenous patients.

The maximum number of cases (39.3%) were in age group 61-70 years. Due to advanced physiologic age, conomitant medical problems and economic status, these patients were not fit for total hip arthroplasty. So the endoprosthetic replacement using bipolar concept, subjects the patients to a less economic-burden, less formidable procedure while still providing benefit of a low friction bearing. This allows for more motion at the femoral stem polyethylene bearing than at cup acetabular surface. The procedure also obviates the use of bone cement in our series.

For the evaluation of results, each patient was followed at regular interval, the minimum period of follow up was 3 months and maximum period was 2 years.

Every surgery should be assessed in terms of patient satisfaction and final outcome.

Various methods (Shepherd system 1960, Larson system 1963. Harris Hip Score 1969) have been used by various workers to assess the result of surgery. In present study the patients were assessed by method of Harris Hip scoring system (1969). West and Mann (1979) reported 91% good to excellent results in 48 hip with follow up of 19.5 months. Van Denmark (1989) et al reported 94% good to excellent results in their 194 bipolar arthroplasties.

In the present study we had 81.25% of good to excellent results and 12.5% had fair result.

the secondary bony changes, like stem loosening and acetabular erosion were studied by many authors with bipolar

prosthesis. Devas and Enves (1983) reported no case of acetebular erosion or stem loosing in their series. In present series also we have not found any case of stem looseining and acetabular erosion.

Hemiathroplasty of the hip, has been performed by different surgeons on a very large number of patients of intracapsular fracture neck femur over last 30-35 years. There is no doubts that this procedure is useful and has given a new life and mobility for a large number of patient for a numbers of years.

CONCLUSION

Bipolar Hip Hemiathroplasty is an operation which can be well performed without many technical considerations or sophesticated instruments and easily affordable. The double bearing surface allows a greater range of movement with bipolar prosthesis, less inner diameter of prosthesis offers easy convertibility into total hip arthrosplasy. Operative procedure allows easy mobilisation of the patients and there by reduces post-operative morbidity and complications.

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Table 1. TYPES OF FRACTURE NECK FEMURE.

Types of fracture	No. of cases	% of cases
Transcervical	52	52%
Basal	28	28%
Subcapital	20	20%
Total	**100**	**100 %**

Table 2. SIZE OF PROSTHESIS

Diameter of Head of prosthesis in mm	No. of cases	% of cases
39 mm		
41 mm	25	25%
43 mm	36	36%
45 mm	32	32%
47 mm	4	4%
49 mm		
51 mm	3	3%
Total	**100**	**100%**

Table 3. End Results - BIPOLAR PROSTHESIS ACCORDING TO HARRIS HIP SCORE

Results	IFV		IIFV		IIIFV	
	No.	%	No.	%	No.	%
Excellent (90-100)	40	40	38	41.38	35	43.75
Good (80-90)	33	33	33	35.86	30	37.5
Fair (70-79)	17	17	15	16.38	10	12.5
Poor (60-69)	8	8	5	5.43	4	5%
5. Failure (<60)	2	2	1	1.08	1	1.25
Total	**100**		**92**		**80**	

SUGGESTIONS TO AUTHORS

The "Orthopaedic Journal" of M.P. Chapter invites original research papers, rare case reports, essay on current trends, common problems in Orthopaedics, summary review of articles published in other foreign & Indian Journals, and proceedings and activities of Orthopaedic clubs of Madhya Pradesh. Following are the guidelines for the authors.

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2. All manuscripts should be submitted in duplicate, type written in double space. Use bond paper of 20 X 28 cm. Authors are advised to keep one copy.
3. Send minimum illustrations and tables. Photos should be on glossy paper of 8 x 10 cm.size. On the back of it write Fig. No., name of authors and title etc. An arrow indicating top should be marked with pencil. Editorial board will have the right, not to publish any photographs, illustrations or tables if they are expensive to print or authors will be requested to make full/part payment of cost.
4. Legends for illustrations should be written on a separate page. In text, all the photographs, figures and tables should be referred.
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Vol. 10, No. 1, 2000

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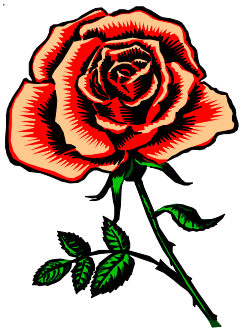

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EDITORIAL

Dear Colleague,

I am sorry for this delay in printing of the 1999 issue of the Orthopaedic journal of M.P. Chapter due to several factors. I seek your indulgence and for forgiveness.

This issue of the journal has pairs of articles including a guest article by Dr. M.S. Ghosh on Sports Medicine. Sports injuries form a specialised group in Trauma. The demands of physical Training for excellence in sports and rising competitive standards expose sports persons to a variety of traumatic conditioning. Unfortunately Sports Medicine is still in its infancy in the country and almost non-existent as a speciality in our State may be because of being way behind other states in Sports. Supply is based on demand and improving standards of sports in Madhya Pradesh will definately attract young Orthopaedic Surgeons to take up this speciality.

We have two articles on Fractures of the clavicle treated by conservative and operative methods. There are a pair of articles on bone tumours - one dealing with epidemeology and the other with diagnostic methods. There are also articles on tuberculosis, trauma, periarthritis shoulder and interesting case reports.

We have got articles from Districts places and we want to encourage this trend. I have mentioned several times that our journal should represent work done in Madhya Pradesh rather than publishing work of Orthopaedic Surgeons from out side the state. Proper documentation of cases especially X-rays and clinical photographs will help our colleagues from the periphery in this direction. Support for references is easy with Internet access and our colleagues in Medical Colleges can also help out.

With regards

H.K.T. Raza
Editor
Orthopaedic Journal
M.P. Chapter.

CONTENTS

Orthopaedic Journal of M.P. Chapter
Vol. 9, No. 1, 1999

Editorial

	Scientific Articles		Page
1.	Sports Medicine - Present Status	Dr. M.S. Ghosh Calcutta	1
2.	Unusual Tubercular Lesions	Dr. R.L. Mittal and Dr. Bhupinder Singh, Patiala	5
3.	Fracture Clavicle	Dr. S.K. Sharma Ujjain	11
4.	Management of Complicated Fractures of Clavicle By Internal Fixation	Dr.N. Shrivastava, Dr. S. Gaur Dr. S. Tandon, Dr. S. Verma, Bhopal	16
5.	Ipsilateral Femoral Neck and Shaft Fractures	Dr. S.C. Goel, Dr. G.N. Khare Dr. S.K. Saraf, Varanasi	24
6.	Significance of Bicipital Tenosynovitis in Early Periarthritis	Dr. Dinesh Sharma, Seoni	27
7.	Role of Fine needle Aspiration Cytology and peripheral angiography in the diagnosis of neoplasms of the extremities.	Dr. Vipin Maheshwari Dr. H.K.T. Raza, Dr. P.K. Panda, Dr. H.D. Siddiqui Jabalpur	32
8.	Musculoskeletal Tumours : An evaluation and retrospective study	Dr. A.C. Agrawal Dr. M.P. Pujari, Dr. S.K. Mukherjee, Dr. K. Sudarshan, Raipur	39
9.	Evaluation of the Bipolar Relacement in fracture neck femur	Dr. K.D. Tripathi Prof. A.N. Verma, Allahabad	47
10.	10 year old neglected Monteggia fracture dislocation. A case report	Dr. S. Banarjee Jabalpur	52
11.	Isolated Bilateral Tubercular Osteomyelitis of Calcaneum : A Case report	Dr. H.S. Verma Dr. Alok C. Agrawal, Dr. Gaurav Govil, Dr. Rajesh Bhargava, Jabalpur	54
12.	An unusual presentation of Osteolytic Lesion in dorsal vertebra - A Case Report	Dr. S.K. Lunawat Indore.	58

Advertisements.

Tear Off

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Your Membership is subject to ratification in the subsequent A.G.M. of the Association. Allotment of membership number will follow the ratification.

Send this form to above mentioned address.

OBSERVATIONS

During the period from 1991 to 1994, 140 patients of Painful shoulder with varying degrees of shoulder stiffness were Treated at O.P.D. of Indira Gandhi Hospital Seoni (M.P.)

Age/Sex occupation vise Incidences are given below.

Male		75 Patients	
Female		65 Patients	
Age Group		Young (0-30 years)	3 Patients
		Middle Age (30-50)	55 Patients
		Elderly (50-70)	82 Patients
Involvement of Shoulder		Rt.	74 Patients
		Lt.	66 Patients
On set		Acute	3 Patients (Younger age)
		Chronic	127 Patients
Population		Urban	36 Patients
		Rural	114 Patients
Occupation		Labour	78 Patients
		Executive class	8 Patients
		House wife	39 Patients
Presenting Complains		Pain	20 Patients
		Stiffness	12 Patients
		Pain+stiffness	88 Patients

Duration	1-3 Months	20 patients
	3-6 Months	88 Patients
	6-12 Months	12 Patients

Past History

H/O Trauma	Severe	Post fracture 1 Patients
	Trivial over use of shoulder	5 Patients

Immobilization	Short Duration	8 Patients
	Long Duration	Nil

H/o Diabetes	5 Patients
Post myocardial Infarction	1 Patient

H/o Nocturnal Pain — 1 Patient out of every 4 patient gave the H/o Episodes of nocturnal pains.

R.O.M. — Lateral rotation movement was earliest to restrict. 3 Patients presented with complete stiffness with no movement.

Inspection — Contours of shoulder normal

In 40% of the cases there was wasting of ant. shoulder muscles. (Supraspinatus)

Palpation	Rotator Cuff	Non Tender
	Acromio clavicular Joint	Normal
	Bicipital Groove	Marked Tenderness in all cases

Yergason's Sign.	+Ve in 50-55% of cases.
X-Ray	Not much Significant

WOC, INDIA FELLOWSHIP IN PAEDIATRIC ORTHOPAEDICS : A REPORT

* Dr. Alok C. Agrawal

I am thankful to WOC, India for selecting me for the prestigious fellowship in Paediatric Orthopaedics with Dr. Ashok Johari M.S. Ortho, FCPS, D. Ortho, DNB Ortho, MAMS, M.Ch. Ortho, England at Mumbai India.

As Instructed I arranged this fellowship with him by mutual under standing from 21st May 2001 to 4th June 2001 for 15 days.

Paediatrics Orthopaedics has established itself into a separate super specially and being in the Medical College. We cater a large number of children and so it was necessary, interesting and beneficial to attend this fellowship.

VENUE

The venue of this fellowship with Dr. Johari was a varied one and so at no time of this fellowship was it tiring or boring and with his high level of energy one himself got more and more energetic.

The fellowship consisted or OPD's for new cases, pre-op. planning and follow-ups at children orthopaedic centre-Dadar, Johari Nursing home-Mahim, and Bombay Hospital Mumbai and Minor reductions, plasters and surgeries at Johari Nursing home - Mahim, Bombay Hospital - Mumbai and Lilavati Hospital Bandra - Mumbai.

TIMINGS

The long enchanting day usually began at 7.30 AM in the morning and finished around 2 AM the night next day. I was surprised one day at the persistence and patience of patients as well as that of Dr. Johari when the work continued upto 4.30 AM in the morning next day with no grudges on either side.

SPECTRUM OF CASES

Majority of Paediatric Orthopaedic OPD's with Dr. Johari consisted of cerebral palsy, children with spastic limbs, fresh neglected and relapsed (CTEV, CDH, Limb length discrepancies, Congenital limb problems, scoliosis, congenital Pseudoarthrosis tibia and humerus, Sprengel's shoulder, Metabolic bone disorders, congenital torticolis, Perthes disease, flat foot, Arthrogryposis and Post. operative cases of telescoping rods and Ilizarov frame fixation.

Many of the spastic cerebral palsy patients without fixed contractures came to get Botulinum toxin to improve upon their neuromuscular development.

---

* MS Ortho, DNB, MNAMS.
Asst. Prof. Ortho. Surgery
N.S.C.B. Medical College
Jabalpur (M.P.)

OPERATIVE PROCEDURES

This fellowship differed from other fellowships which consist of only clinical observership and having judged and trained to a reasonable extent one had to work and assist in all minor and major cases along with all other clinical and academic work.

I got a chance to see and assist some good surgeries like - correction of congenital scoliosis with combined anterior and posterior release, fusion and CD instrumentation. Correction of Idiopathic scoliosis in children with CD instrumentation, CTEV surgery, flat foot surgery, CDH surgery, Torticollis, sprengels, shoulder, surgery for cerebral palsy, Ilizarov for deformity correction and lengthening and Hip and knee relases for flexion contractures etc.

I was glad when I was made to go to All India Centre for Physical Rehabilitation Haji Ali where Dr. B.D. Atani - the director and Orthopaedic specialist took me around the wards the various physiotherapy centres, Artificial limb centre and O.T. for demonstration of cases of that day.

The last day of this fellowship was along with the Bombay Orthopaedic Society - Clinical meet on Paediatric Orthopaedics arranged at WADIA Chiledren's hospital Parel - Mumbai, where a long series of cases were presented and discussed by Orthopaedic colleagues and a guest talk on Paediatric anaesthesia - use of regional anaesthesia in paediatric orthopaedics surgery presented by Dr. Laxmi V. 92.

This fellowship was a real condensed training for 15 days and at no time were discussions denied for qeries arising out of work and I feel myself a lot more confident in managing paediatric cold cases now.

COURTESY

I can not forget the local hospitality and courtesy extended by Dr. Mrs. Johari and family, staff and colleagues who arranged for almost my all daily needs i.e. round the clock food, accomodation, transport and familial environment which gave us more and more time to concentrate on patients care and learning and I take this opportunity to express my gratitude and thanks to all of them.

In the end I would like to congratulate and thank WOC India for arranging such a wonderful fellowship and expect a lot of young budding Orthpaedic surgeons to benefit from taining programmes like this in the future too.

GUN SHOT INJURIES : AN UNUSUAL PRESENTATION A CASE REPORT

* Dr. A.C. Agrawal ** Dr. H.K.T. Raza *** Dr. Rehan-ul-Haq

INTRODUCTION

High velocity projectile injuries resulting in combined bony, vascular and soft tissue trauma to an extremity are a common occurrence. Vascular injuries are known to constitute a part of about 1/6th of these complex composite wounds. Commonly diagnosed conditions in patients with potential vascular injuries using non invasive technique of Colour Doppler are : (1) Vasospasm (2) External compression (3) Arterial distruptions (4) Intimal flaps (5) Arterio venous fistulas, in the order.

Acute pseudoaneurysms, are found in only 1% of all cases.

Early identification of these injuries and aggressive multi-speciality care is essential for limb salvage. In this age of economic and health care crisis this is not always possible in a developing country. We are reporting a case of 26 yrs the popliteal artery following a gun shot injury.

CASE REPORT

A 26 years old male from Satna presented 48 hours after sustaining a gun shot injury. The entry wound was in the mid calf. The patient had pain in his limb, with pallor; paresis, loss of distal pulsations and anaesthesia from middle of leg downwards. X-ray revealed an intercondylar fracture of the femur with the bullet lying in the suprapatellar pouch on the lateral side.

A Colour Doppler study revealed “acute pseudoaneurysm of the middle and distal segment of left popliteal artery with no flow in the posterior tibial artery.” On exploration a length of the vessel was found to be thrombosed. In the absence of a vascular surgeon, and due to the time elapsed (48 hours) and that the calf muscles were already showing the four cardinal signs of nonviability i.e. change of Colour, friable Consistancy, loss of Contractility and loss of Capacity to bleed as described by Gregory and above knee amputation had to be done.

DISCUSSION

The wound sustained as a result of a firearm injury depends upon

1. The weapon which fired the projectile
2. Nature of the projectile
3. Velocity & stability of the projectile
4. Ricocheting of the bullet
5. Distance of the firearm and
6. The angle at which it struck the body.

As the bullet transverses the different planes of the body it dessipates energy

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** Prof. and H.O.D.
*** Resident

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Jabalpur (M.P.)

which results in tissue destruction. The wounding power of a bullet is proportional to its mass multiplied by the cube of its velocity.

The bullet may wobble i.e. travel in an irregular fashion or Ricochet i.e. change its direction after striking an object. This results in bizarre patterns of soft tissue and bony injuries.

According to Trooskin SZ; el al; 1/6 of all patients with civilian firearm wounds have arterial injuries. Even then 100% of limb salvage is possible if correctly treated. By colour doppler on initial evaluation commonly diagnosed conditions are - () Vasospasm (2) External compression (3) Arterial disruption (4) Intimal flaps (5) Arteriovenous fistulas.

Only 1% of patients are found to have an acute pseudoaneurysm.

Operative management includes use of Saphenous veins, prosthetic grafts and ligation. This requires a multidisciplinary apporach and urgentation. In our case the patient was brought almost 48 hours after injury with muscles below the knee level showing sings of nonviability. Hence he had to be treated by an above knee amputation.

After gun shot injuries acute pseudoaneurysms are an unusual occurance. The present case is more so because although the entry wound was in the posterio medical aspect of the mid calf the -

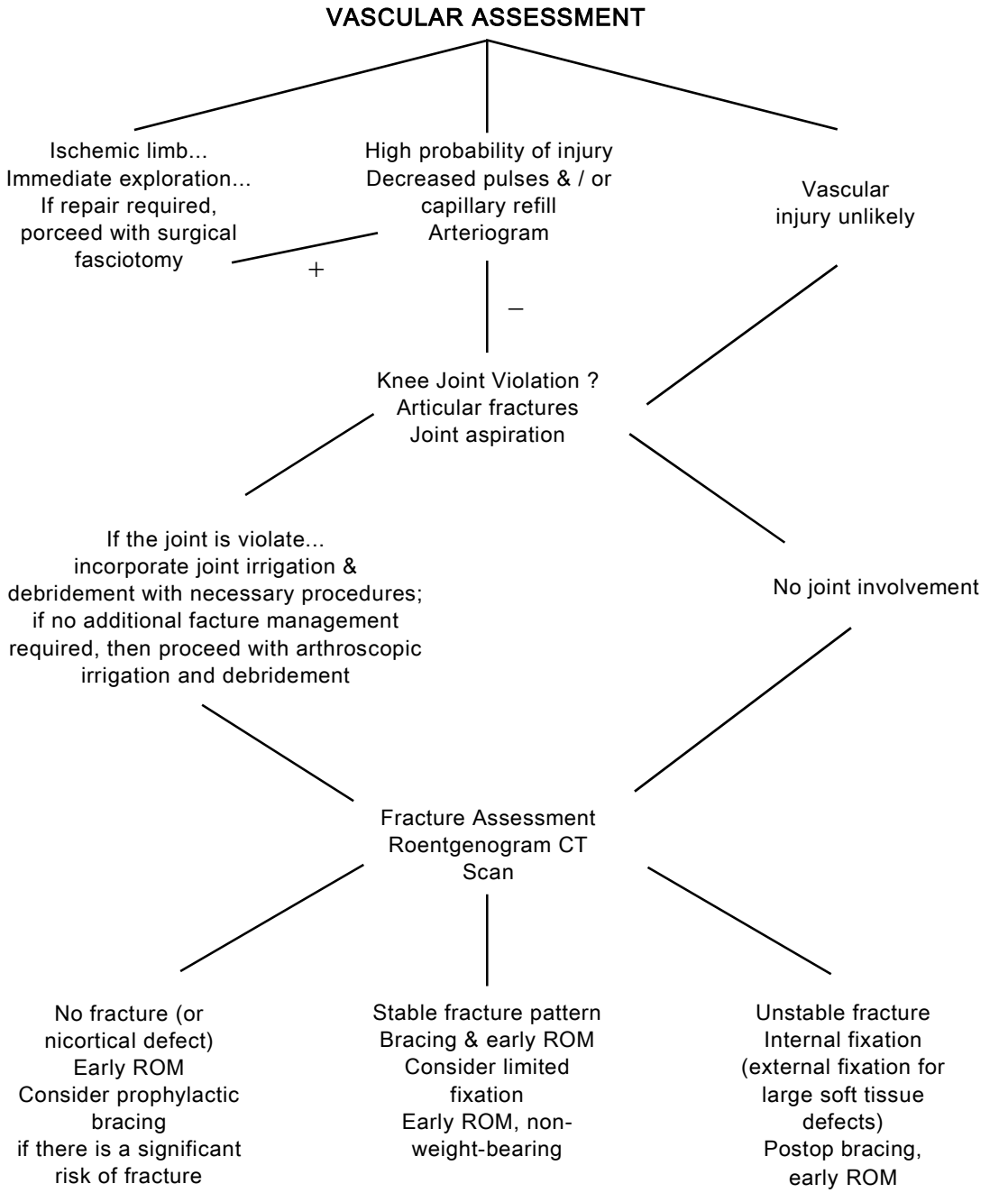
1. Acute pseudoaneurysm was in the middle and the distal segment of the popliteal artery.
2. There was a comminuted intercondylar fracture of the Femur. The Tibia / Fibula were found to be normal.
3. The bullet was located in the Suprapatellar pouch on the lateral side turned upside down.

The bullet must have hit the posterior medical aspect of the calf from behind while the victims knee was flexed to 90. Travelling through the gastroenemius and solius to reach the popliteal space it must have caused damage to the blood vessels. Resulting in pseudoaneurysm of the popliteal artery. Then it must have hit the femur, between the condyles, resulting in an intercondylar comminuted fracture. Then the bullet must have Ricocheted and come to lie in the suprapatellar space on the lateral side.

The Criteria for Limb Salvage are :

1. When the limb is nonviable, that is when the vascular injury is non reparable or is accompanied by warm ischemia time over 8 hours.
2. When even after revascularisation the limb is so severly damaged that function is less satisfactory than offered by a prosthesis.
3. When preservation of limb is a threat to the patients life.
4. In a limb which demands several operative precedures; incompatable with the personal sociological and economic consequences the patient is willing to withstand.
5. In a military or mass casualty situation where salvage of life or transport of the injured victim would justify amputation rather than prolonged surgical efforts necessary for limb salvage.
6. In a patient with severe, multiple-system injury.
7. In cases of replantation, where the function expected is were compared to limb salvage.

ALGORITHM FOR MANAGEMENT OF GUNSHOT WOUNDS OF THE KNEE



TO CONCLUDE

incidence of firearm injuries in the civilian population are on an increase. War related firearm injuries have been extensively reviewed. Much less information is available concerning these in the civilian population. For better patient management and for medicolegal purpose some recommendations are :

1. Maintenance of "Penetrating extremity trauma register.
2. Thorough knowledge of firearm, ammunition, and wound ballistics.
3. Knowledge of forensic medicine and Medical jurisprudence.
4. Early identification and transport of patients with gun shot injury.
5. Aggresive, multispeciality care essential for limb salvage.
6. Development of standard protocols for patient management.

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OSTEITIS FIBROSA CYSTICA : A REPORT OF TWO CASES

* Prof. H.K.T. Raza ** Dr. Alok C. Agrawal *** Dr. Gaurav Govil

ABSTRACT

Multiple cystic lesions of weight bearing bones in adults present a diagnostic dilemma. The various possibilities include multiple myeloma, fibrous dysplasia, hyperparathyroidism, Paget's disease, osteomalacia etc. Two cases presented to us with similar cystic lesions. One involved both of the tibia fibula and the other involved multiple sites in the flat and long bones. The serum calcium and alkaline phosphatase level were raised while serum phosphorus level was at a lower normal level. The biopsy revealed fibrohisteocytis lesion with giant cells in a haemorrhagic stroma. A provisional diagnosis of hyperparathyroidism was considered. Medical treatment with high dose vitamin D was initiated. The lesions were subsequently curetted and bone grafted. On followup no recurrence or relapse of the lytic lesion is evident in one case while the other developed a pathological fracture of is right femoral diaphysis.

The cases are being reported for their rarity and unusual presentation.

CASE REPORTS

Case 1 : A 33 years old male presented to our hospital with complaints of pain over left leg during walking since 2 months. It was associated with swelling in lower half of left leg. No. history of trauma to leg, prolonged fever or any other joint pain could be elicited. On examination, the left lower limb presented a singluar swelling over anterolateral aspect of midthird leg. The swelling was tender, firm in consistency, overlying skin mobile and margins well defined. The regional lymph nodes were not palpable. The movements of knee and ankle were full and pain free.

Blood tests including the TLC, DLC, ESR were normal. The serum calcium (10.6 mg/dl) and alkline phosphatase (36.2 KA units) were raised while serum phosphorus (2.86 mg/dl) were normal. Roentgenograms showed three ovoid lytic lesions in proximal and distal diaphyseometaphyseal region of tibia and distal diaphyseometaphyseal region of fibula. with well-defined thin sclerotic margin 4 cm x 2 cm in size, with cortical expansion. (Photograph NO. 1).

Fine needle aspiration cytology suggested a proliferative fibrohistocytic lesion with giant cells. An open biopsy, on microscopic smear examination shows oval or spindle fibroblastic cells with interspersed osteoblactic giant cells and bony lamellae with osteoblastic remnants, suggesting variant of giant cell tumor. A diagnosis of hyperparathyroidism was considered. The patient was kept on high doses of calcium and vitamin D.

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Jabalur (M.P.)

The lesion was curetted until bleeding normal raw bone and packed with corticocancellous auntogenous iliac bone graft. The recovery following operation was uneventful and wound healed.

A year after the operation patient has no complaints, knee and ankle movements are full and no clinical or roentgenographic evidence of recurrence could be detected.

Case 2 : A 31 years old male, presented to our hospital 3 years back with complaints of pain and swelling of right leg for which he was operated upon and curettage and bone grafting done in Oct'99. Subsequently the patient was asymptommatic and was ambulatory with crutches. He started complaining of pain 10 months back with appearance of swelling over left Elbow, Left leg and right thigh-since 15 days he is unable to stand and walk. On exmination patient was dehydrated, malnourished asthenic built with multiple lobular swellings around left elbow, left leg and right femur. The loss of transmitted movements at right knee and abnormal mobility at right thigh was found.

The blood picture TLC, DLC, ESR were normal. The serum calcium was markedly raised (> 11.8 mg/dl), alkaline phosphatase (39.8 KA units) was raised, serum phosphorus (3.13 mg/dl) were towards lower limit and serum proteins especially albumin were deranged. The bence-jones protein were negative, radiographically patients had fracture of the midthird shaft of femur right side and multiple lytic lesions in left tibia, left humerus lower end, right 6th rib, skull, left pubic rami, right lesser trochanter region and iliac crest left (Photograph No. 2).

The patient on his initial admission 2 years back had been subjected to biopsy which revealed giant cells in a fibrous stroma and was labelled with diagnosis of giant cell tumor variant. The recurrence of the lytic lesions with appearance of hypercalcemic state, suggests otherwise. The most likely cause is hyperparathyroidism, with picture simmulating osteitis fibrosa cystica. The patient is still under treatment and plan for interlocking the right femur has been worked up.

DISCUSSION

Hyperparathyroidism is a pathologic state characterized by the excessive secretion of parathyroid hormone (PTH). The pathologic changes of hyperparathyrodism are manifested through the effects of PTH on target organs the skeleton, kidneys and indirectly the gastrointestinal system.

It is most prevalent in population aged 60 years and older, women are affected two to four times as often as men. The clinical presentation of symptomatic patients may be thought of as a spectrum, with the more indolent stone disease at one end, severe bone disease at the other end and gastrointestinal and neuropsychiatric sysmptoms some where in between. Our patients are male and of young age group. The bone pain, tenderness and deformity with occasional incidences of fractures are the usual presentations. Osteitis fibrosa cystica the term used for advanced skeletal manifestations for hyperpathyroidism is rare. Our patient presents with bone pain in one and pathological fracture in other. The fundamental histological changes are increased resorption of cancellous and cortical bones followed by substitutive fibrosis, these changes are reflected radiographically by poor definition of

cortical surfaces, increased cortical striations “tunnelling” cortical thining and distortion and bluring of trabecular bone.

Subperiosteal resorption of cortical bone, is pathognomic feature. Though brown tumours or osteoclastomata may present infrequently. They are intraosseous soft tissue masses characterized by focal accumulation of fibrous tissue and giant cells in a heamorrhagic stroma. They present radiographically as well defined, purely lytic, often multiple, lesions may produce bone expansion, and may progress rapidly. The most commonly involved sites are mandible, clavicles, ribs, and pelvis. Brown tumours, once believed to be much more common in primary hyperparathyrodism are being seen with increasing frequency in patients with secondary hyperparathyroidism.

The conditions affording most difficlty are those where focally or generally there is radiological and histoligical similarity to osteitis fibrosa, but without the disturbance in the plasma calcium and plasma phosphate. Pagets disese with its occasional occurence of cysts, the histological resemblance and the occasional occurence of hypercalcemia may render it difficult to distinguish from parathyroid osteodystrophy. In pagets disease, there is usually a marked rise in blood alkaline phosphatase.

The radiological appearance of multiple myeloma may simulate closely the appearance of parathyroid osteodystrophy, especially in the collapse of the vertebra, the occurrence of the punctate areas of diminished density in the skull and long bones, and fine mottling of the pelvic bones. The blood calcium to phosphate ratio is as a rule normal, while an abnormal protein - Bence Jones protein may appear in the urine.

The polyostotic fibrous dysplasia rarely occurs in the adolescent. The blood calcium and phosphate changes are absent and on an X-ray the unaffected parsts of bone have a normal appearance and do not present a diffuse osteomalacic appearance of hyperparathyroidism.

The treatment is aimed at neck exploration for parathyroid adenmas. However, indications in an otherwise asymptommatic patients are a serum calcium level of 11.5 mg/dl, previous episode of life threatening hypercalcemia, radiological evidence of kidney stones, reduced renal function, 24 hour urine calcium more than 400 mg, reduction in bone density more than 2 standard deviations for age, gender and race matched normal. Since our patients did not fall in any of the above category, the neck was not explored.

Orthopaedic treatment is directed towards the adequate protection of softened bones from all deforming stress and stains. The removal of parathyroid tumor is followed by rapid and pregressive healing of the bones. Recent studies have shown that a large proportion of patients do not demonstrate the progression of disease in terms of bone changes, biochemical changes in calcium or PTH, or renal dysfunction.

A prolonged regular follow up is necessary. We report these cases with an aim to highlight the usually missed, misdiagnosed and inappropriately treated cases of hyperparathyroidism presenting with bone changes.

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LEGENDS

Photograph No. 1 : Pre and post operative X-rays of case number 1 showing lytic lesion in tibia and fibula, subsequently bone grafted.

Photograph No. 2 : X-rays showing mutiple lytic lesion in left humerus, right lesser trochanter and left pubic rami & pathological fracture of right femur.

PLATE OSTEOSYNTHESIS FOR FEMORAL DIAPHYSIAL FRACTURES

*** Sanjeev Banerjee**

ABSTRACT

26 Femoral Diaphyseal Fractures were Treated by Plate Osteosynthesis. The Site of Fractures was MID/Lower Third of Femur. With Proper Selection of Cases, Respect for Fracture Biology, Strict Compliance with Standard Biomechanical Principles and Surgical Technique, Excellent Result were Achieved in Almost all Cases. This Study is an Attempt to Prove the Relevance of this Procedure Despite the Popularity of Intra-Medullary Fixation Techniques.

INTRODUCTION

Femoral Diaphyseal fractures in adults have conventionally been treated with Intramedullary nailing. For fractures in the upper third - around isthmus, this technique still remains the logical choice. There was, however, a problem of stability when fixing lower and middle third fractures.

These were the areas where plate fixation gained popularity. With the advent of interlocking techniques the plate fixation has lost popularity.

In this study the result of Plate Osteosynthesis in mid and lower third femoral fractures have been evaluated. It was found that this procedure gives excellent results in almost all cases with acceptable complication rates.

MATERIAL AND METHOD

From January 1994 to June 1999 twenty six cases of fracture Shaft Femur (middle and lower third) were subjected to Plate Osteosynthesis.

The following principles were followed :

1. Standard posterolateral approach was used.
2. Minimal soft tissue stripping was done and that too only laterally. Medical stripping was carefully avoided.
3. For reduction indirect methods like distraction was used instead of angulation technique - which delivers bone out of the wound and furthur strips medical structures.
4. For transverse fractures minimum 10-12 cortical hold on either side was used (10-12 hole Broad 4.5 DCP).
5. For spiral / oblique fractures - fracture was first fixed with inter frag screws and then neutralised with long DCP with minimum 8 cortices hold on either side.
6. Bone grafting was done in case of reoperation, non union, comminution

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with bone loss, osteoporotic bone and when on opening the fracture ends were found circumferentially stripped. (eg. fractures with gross overriding)

7. The patients were followed up at 6 weekly intervals. Straight leg raising and knee bending were started as early as possible. Non weight bearing ambulation was encouraged. Partial weight bearing was started after six weeks and full weight bearing only after radiological evidence of union.

RESULT

Out of 26 Femoral fractures, 18 were in age group 20-40 years and 6 in age group of 40-60 years. There were 21 males and 5 females. All fractures were in mid and lower third Femur. 10-14 hole Broad 4.5 DCP was used depending on fracture configuration. Bone grafting was done in 6 cases, 5 primarily and in 1 case 3 months post operatively.

All fractures went on to unite satisfactorily. Union time was 3 months in 6 cases (23%), 4.5 months in 19 cases (73%), and 6 months in 1 case (4%). 24 cases (92%), recovered full knee movements and 2 cases (8%), recovered more than 90 flexion, 1 case (4%) developed infection and was treated by complete opening of wound on the 4th pose operative day, lavage and I.V. antibiotics. He eventually united and had full knee movements.

1 case (4%), who was a chronic alcoholic, bent his plate after sustaining a fall, 1 month post operatively. He was treated with replating and grafting and went on to unite in 4.5 months with full knee movements.

The maximum follow up was five years and minimum was four months. The average follow up was 26.3 months.

Oveall there was 88% excellent results with solid union and full knee movements. 8% acceptable results with solid union and more than 90 knee flexion. 1 case (4%), developed infection which increased his morbidity but eventually had excellent result.

DISCUSSION

With the advent of Interlock nailing techniques almost all femoral diaphsial fractures have become amenbale to intramedullary fixation. Plate Osteo-Synthesis has lost popularity because of the arguments that it needs opening of fracture haematoma, wide exposure leads to increased risk of infection and non union, and implant failures are high because it is biomechanically unsound due to its eccentric placement.

In this study we have acheived excellent results in almost all cases. By respecting the fracture biology and following biomechanical principles stringently there were no nonunions, no implant failures and minimum infection rates. This technique is simple to perform, operative time is less, no complicated devices are needed, the learning curve is not so steep and there are no radiation hazards. Our results match with Christovitsinos JP el al (1997) who acheived 100% results in all 2 cases of comminuted femoral fracture treated by bridge plating.

The union time in this study 3-6 months compares well with the reported union time of 6-9 months in mid / lower third femoral fractures treated by reamed / unreamed I.M. nailing (S.K. Saraf, 1999).

Interlock femur nailing also gives almost 100% good results in the best and experiencted hands but even then there are problems of breakage of screws, precise instrumentation techniques, radiation exposure, cortical fragmentation and prolonged anaesthesia. (R.K. Kanojia, 1998).

To conclude Plate Osteosynthesis of mid and lower third femoral fractures is a vaible alternative technique for such fratures and if done properly gives results comparable with the results of intramedullary fixation techniques.

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LEGENDS FOR ILLUSTRATIONS

Figure No : I a & b

Shows Initial / Final X-ray for Comminuted Mid - Lower Third Fracture Femur.

Figure No : Ii a & b

Initial / Final X-ray of Bent Plate Dut to Fall, Treated with Replating and Grafting.

Figure No : III a & b

Initial / Final X-ray of Transverse Fracture Treated with Plate Osteosynthesis

Figure No : IV

Final Radiological Result of Case which Developed Infection.

DECISION MAKING IN CASES OF SOFT TISSUE DEFECTS OF LOWER LIMB

* Dr. P. Agrawal

INTRODUCTION

In urban areas where there is much traffic both automotive and pedestrian, lower limb trauma is often seen as a result of patient been ran over. This topic is of interest to both plastic and orthpaedic surgeons. The significance may be the result of the fact that each surgeon expect the other to manage the problem, thus the patient may either fall through the cracks in the system or alternatively may become caught in the tug of war between competing surgeons.

What so ever is the case, but the fact remains the same that early closure is crucial and this urges close co-operation between the involved services to achieve the treatment.

While there are numerous methods of soft issue coverage. The Initial Assessment of limb have most important on the out come of treatment. This involves thorough neuro-vascular examination, determination of extent of tissue loss and identification of exposed vital structures like nerve, vessels, bone, joint & tendons. Emphasis should be placed particularly on Salvagebility. This decision should be made early because it becomes increasingly more difficult for the patient to accept amputation.

DETERMINATION OF SALVAGEBILITY AND SPECIFIC REQUIREMENT OF LOWER LIMB COVERAGE

With the availability of micro-neuro-vascular repair and soft tissue coverage almost no defect if beyond surgical salvage, still Insensate foot with vascular problem should not be salvaged. Similarly severe degloving injury or avulsion of planter weight bearing sole are difficult to salvage. Therefore included goal of reconstruction is individualised and depends upon pateints age, occupation and expectations.

GOALS OF RECONSTRUCTION

First of all restoration of function for normal locomotion is vital secondary preservation of sensate, durable planter sole which is able to withstand the stress and sheer associated with wieght bearing. Additional Consideration Includes :

- Limited scaring
- Cosmesis
- Social acceptability and
- Ability to wear normal foot wear.

Once it is decided to go ahead with reconstruction then Standard Protocol is would culture, broad-spectrum antibiotics, aggressive surgical debridment and fasciotomy is instituted immediately.

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EVALUATION OF TISSUE LOSS

Soft tissue, injury is often far worse than what is visible immediately. There is an extended area of soft tissue and bone involvement beyond the point of impact. This is referred as Zone of Trauma, and this forms the basis of serial debridment. This zone of trauma should always be considered when assessing soft tissue and bone loss. Soft tissue loss is evaluated in terms of quality and quantity. Though it is possible to supply the quantity of tissue, but it is not always possible to match the quality of highly specialised planter weight bearing surface, particularly in terms of durability and sensations.

TIMING

It is vital to cover the wound as early as possible because delay may cause desiccation of tissue specially tendons and done. In addition delayed coverage is often associated with increased oedema increased local fibrosis and increased incidence of bacterial colonisation and infection. While early coverage leads to fewer overall operations, increase rate of bone union and decrease hospital stay.

COVERAGE OPTIONS

Final defect size, composition specific requirement of tissue loss and the condition of remaining tissue determine the choice of coverage. When selecting from plethora of coverage options, the simplest option is considered first before embarking upon more complex re-constructive procedures.

Following are the options available :

1. Primary or delayed primary closure with or without skeletal shortening.
2. Split thickness skin graft.
3. Local flaps
4. Regional flaps
5. Distant flaps
6. Free flaps.

1. CLOSURE WITH OR WITHOUT SKELETAL SHORTENING

Simplest solution to some of the fore foot wounds is skeletal shortening and primary closure. Preservation of digits and part of fore foot may not be in the best interest of patient particularly when digits are devoid of function. Before contemplating this irreversible procedure, final function of the foot should be considered and as much as possible length and foot should be maintained.

2. SKIN GRAFTING

This is the simple and effective method of coverage. These grafts have been applied to the dorsal surface of foot non weight bearing sole and where well vascularized bed is present, without exposed bone, cartilage and tendon devoid of paratenon. Exception to this rule is children.

3. LOCAL FLAPS

When available local tissue is optimal and provide closest substitution for lost tissues, variety of local flaps can be effectively applied for comparatively smaller defects. Defect size and paucity of local tissue generally limit their use. Local flaps may be in the form of fascio-cutaneus, muscle or mycoutaneous flaps. Defects of upper 2/3rd and tibia can be covered with gastroenemeus or soleus muscle flaps. Similarly defects of sole or tendoachalis can be covered by medial and lateral Planter artery flap or lateral Calcaneal

flaps, small muscles of the sole like Abductor hallucis, flexor hallucis brevis and Abductor digit minimi can also be used to fill up small defects of sole.

4. REGIONAL FLAPS

When local flaps are not available then Regional flaps like Dorsalis pedis artery flap, reverse flow Post tibial artery flap or superficial median sural artery flaps are used to cover the defects of leg and sole. All these are island flap and have remarkable wide arc of rotations.

5. DISTANT FLAPS

Paucity and local tissue and limited mobility associated with local regional flaps necessitates transfer of distant flap. Other indication includes failed local flap, chronically infected area, poorly vasculaized bed, anticipated future reconstructive procedure and composite tissue transfer.

The workhouse distant flap is cross leg flap. It has got very low flap failure rate, but prolonged immobilization in controlled position limits its use is clinical practice.

6. FREE FLAPS

It provides well vascularised composite tissue in single stage with rapid recovery time. However it requires micro-vascular surgical skill and presence of adequate recipient vessel at the site.

Radial artery fore arm fascio-cutaneous flap is a versatile flap which provides durable, non bulky tissue and lateral cutaneous nerve can be incorporated in the flap to provide sensibility. Unfortunately donar site deformity is suboptimal. Occasionally scapular flap can also be used for larger defects. It is based on circumflex scapular artery. Any donor site can be primarily closed.

Variety of muscle flap are available to cover the defects with optimal contouring is latissimus dorsi flap based on thoracodorsal artery, gracilis flap based as medial circumflex femoral artery and pectoralis major or rectus abdominis muscle flaps can also be harvested. These muscle flaps can readily contoured and covered with split thickness skin graft. They are quite durable when subjected to weight bearing stress. They form fibrous shear planes between muscle and skin graft as well as between muscle and bone. These shear plane help in dissipating shear forces.

As far as sensibility is concern it has been noted that degree of sensibility had no significant co-relation with long-term flap success.

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OSTEOCHONDROMA FROM THE CALCANEUM - A CASE REPORT

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ABSTRACT

Solitary osteochondroma is a development anomaly of bone that resutls in the formation of an exophytic outgrowth on the surface of the bone. They may occur on any bone, preformed in cartilage but are usually found on the metaphysis of a long bone near the physis.

We report a case of solitary Osteochondroma from the Calcaneum.

Key Words : **Cartilaginous Bone Tumours, Osteochondroma, Calcaneum, Exostosis.**

INTRODUCTION

It is an anomaly of hamartomatous type, often called Exostosis. It is classified under benign bone tumours but are non-neoplastic in nature. In fact these are aberrant epiphyseal development with displacement of physeal cartilage through the perichondrial fibrous ring and subsequent growth at right angles to the long axis of the bone.

It accounts for 35% of benign bone tumours and 10% of all bone tumours. It has a predilection for long tubular bone, 35% around the knee. They are also frequently seen in flat bones involving Ilium, Scapula and are rarely seen in small tubular bones of hand and feet, ribs and vertebral column. They practically never occur in the cranio-fascial bones.

We have gone through the available literature and have not seen any case so far being reported from the Calcaneum.

CASE REPORT

This patient aged 30 years, a labourer by occupation, reported for the first time in his life, the reason he gave was poverty. Unfortunately it was supported by his illiteracy, unawareness of available limitations, and above all, the swelling was asymptomatic.

History : He had first noted the swelling at his age of 10 years which has gradually progressed to its present dimensions. The swelling was described initially to be of peanut size, which has

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pregressively increased in dimensions over a period of 20 years. There is no history of trauma to the foot, prolonged fever or any other swelling. Patient is otherwise healthy and has been able to do his activities of daily living and bread earning.

On Examination : The person was apparently healthy with no other obvious anomaly or pathology. He walked with a mild limp on the left side.

Left foot : There was a 21/2" X 2" oval, multi lobular, smooth surfaced, non tender, fixed bony growth on the medial side of the foot in the subtalar zone, with the skin turning into a callosity over it due to continous weight bearing and was freely mobile.

He had a full range of ankle and subtalar movements and no tendon involvement or neurovascular deficit. There was no other bony growth palpable over the entire skeleton.

Skiagram showed an obvious pedunculated bony lesion with a lobulated cauliflower shaped cap arising from the medial surface of the left calcaneum. Al other investigations were within normal limits.

The patients was planned for surgical management. Epidural anaesthesia was given and the exostosis was exposed after tourniquet application and the exostosis was found to be arising from the medial surface of calcaneum. Excision of the growth was done by removing the lesion in totality along with its cartilage cap and perichondrial cover. Closer was done in layers after insertion of closed suction drain. Pos operatively the patient was given a compression bandage for 2 weeks and then was permitted to walk with touch down weight bearing.

The growth was cut through and a segment sent for histopathological examination; the report was osteochondroma, no malignant changes seen in any of the sections.

At 6 weeks and 3 months followups, clinically and radiologically, patient was asymptomatic and no evidence of recurrence could be noted. At 6 months followup, he had no fresh complaints and radiologically no evidence of recurrence. He has returned to his occupation as a labourer with increased zeal and vigour.

Discussion

We must keep in mind the possibility of parosteal osteosarcoma and periosteal chondroma while treating such swelling.

The incidence of malignant change is very low in a osteochondroma, almost 1-2%. It turns into chondrosarcoma from the cap.

Cases have been reported from cervical rib, vertebrae, base of the skull, pelvis, spine, scapula, distal end of calvicle, larynx, mandible but nonr from the Calcaneum.

We are reporting this case for the sake of its rarity.

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