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CONTENTS

EDITORIAL

DOES UNDERGRADUATE ORTHOPEDIC EDUCATION NEED A CHANGE?

THE STUDENTS PERSPECTIVE IN MADHYA PRADESH

INTRODUCTION

Undergraduate Medical Curriculum in general is oriented towards training students to undertake the responsibilities of a physician on first contact so that he is capable to look and manage in a holistic way the preventive, promotion, curative and rehabilitative aspects of medicine.

With the wide range of carrier opportunities available today and postgraduation becoming a fashion or rather an essentiality of life, Undergraduate training not only has to be broad based and flexible, but it should also aim to provide an educational experience of the essentials required for the health care in our country (need of the community).

To undertake the responsibilities of medical service situations which are changing conditions and of various types, it is essential to provide adequate placement training tailored to the need of such services so as to enable the graduates to become effective instruments of implementation of the requirements of these situations. For this the graduate should endeavor to acquire basic training in the different aspects of patient care.

One has to also recognize the importance of rural health care services and community aspects of health care. A medical undergraduate during his training should personally experience the needs of the rural people and be trained in treatment modalities which will be simple, economic and feasible in these distant sectors, although he should definitely be taught about the ideal modalities, recent innovations and sophistications which may make it possible to give more and more comfort to the patient during treatment. The training should be such that he becomes capable of functioning independently in both urban and rural setups.

Based on the above goals, the recent curriculum (1997) set by MCI on undergraduate orthopaedic education is as follows:

ORTHOPAEDICS

A. KNOWLEDGE:

The student shall be able to:

1. Explain the principles of recognition of bone injuries and dislocation;
2. Apply suitable methods to detect and manage common infections of bones and joints;
3. Identify congenital, skeletal anomalies and their referral for appropriate correlation or rehabilitation;
4. Recognize metabolic bone diseases as seen in this country;
5. Explain etiogenesis, manifestations, diagnosis of neoplasm affecting bones;

B. SKILLS

At the end of the course, the student shall be able to:

1. Detect sprains and deliver first aid measures for common fractures and

sprains and manage uncomplicated fractures of Clavicle, Colle's Forearm, Phalanges etc;

2. Use techniques of splinting, plaster, immobilization etc;
3. Manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities;
4. Advice aspects of rehabilitation for Polio, Cerebral palsy and Amputation;

C. APPLICATION:

Be able to perform certain orthopaedic skills, provide sound advice of skeletal and related conditions at primary or secondary health care level.

D. INTEGRATION:

Integration with Anatomy, Surgery, Pathology, Radiology and Forensic Medicine be done.

DURING INTERNSHIP:

The goal as recommended by MCI for Orthopaedics is as follows:-

The aim of teaching the undergraduate students in Orthopaedics and Rehabilitation is to impart such knowledge and skills that may enable him to diagnose and treat common ailments. He shall have the ability to diagnose and suspect presence of fracture, dislocation, acute osteomyelitis, acute poliomyelitis and common congenital deformities such as congenital talipes equinovarus (CTEV) and dislocation of hip (CDH).

A. Therapeutic procedures independently

B. Skills under supervision

A. Therapeutic:

An intern must know how to carry out:

a) Splinting (Plaster slab) for the purpose of emergency splintage, definitive splintage and post operative splintage and application of Thomas's splint.

b) Manual reduction of common fractures- phalange, metacarpal and Colle's fracture;

c) Manual reduction of common dislocations, interphalangeal, meta-carpophalangeal, elbow and shoulder dislocation.

d) Plaster cast application for undisplaced fractures of arm, forearm, leg and ankle.

e) Emergency care of a multiple injury patient.

f) Precautions about transport and bed care of spinal cord injury patients.

B. Skills:

Skills that an intern should be able to perform under supervision:

a) Advice about prognosis of poliomyelitis, cerebral palsy, CTEV and CDH.

b) Advice about rehabilitation of amputees and mutilating traumatic and leprosy deformities of hand.

c) An intern must have observed or preferably assisted at the following operations:

   i. Drainage for acute osteomyelitis.
   ii. Sequestrectomy in chronic osteomyelitis.
   iii. Application of external fixation.
   iv. Internal fixation of fractures of long bones.

It is clear from the above mentioned curriculum that the distribution of topics and their plan is quite haphazard. It also shows that this curriculum does not encompass all

the sections of modern orthopaedics or its current practice in the form of joint replacements, arthroscopy, interlocking nails, Ilizarov, JESS and other external fixators, modern trauma or first aid and advanced trauma and life support courses, reimplantation of limbs etc. It is also clear that this course does not cover common important cold orthopaedic topics too in the form of cervical spondylosis, low back pain, anterior knee pain, osteoarthrosis or plantar fasciitis etc.

It has also been observed that the syllabus for undergraduate teaching in orthopaedics in majority of universities has not changed for a length of time. This is despite the fact that it is about a branch of medicine where there has been revolutionary development in diagnosis and operating modalities of treatment with a singular aim of making an individual strong, straight and supple after he sustains trauma or develops an orthopaedic disease.

Based on these facts we tried to find out what do the final MBBS students feel about undergraduate orthopedic teaching and planned this study.

MATERIAL AND METHOD

The final M.B.B.S. undergraduates posted in orthopedics in NSCB Medical College, Jabalpur, formed the material of this study. They were basically taken to represent students from the whole state.

66 final year MBBS students were given a questionnaire asking them to list the orthopaedic topics of their interest and the reasons for the same.They were also asked to mentions methods to improve upon orthopaedic teaching and learning during MBBS classes and linked postings.The students were permitted to hide their identity if they wished so. There responces were tabulated based on the percentiles and topics and skills having a frequency above 2/3rd were taken to know the trends or perspective of medical students of M.P. not only towards orthopedics education but towards MBBS education as a whole.

OBSERVATIONS

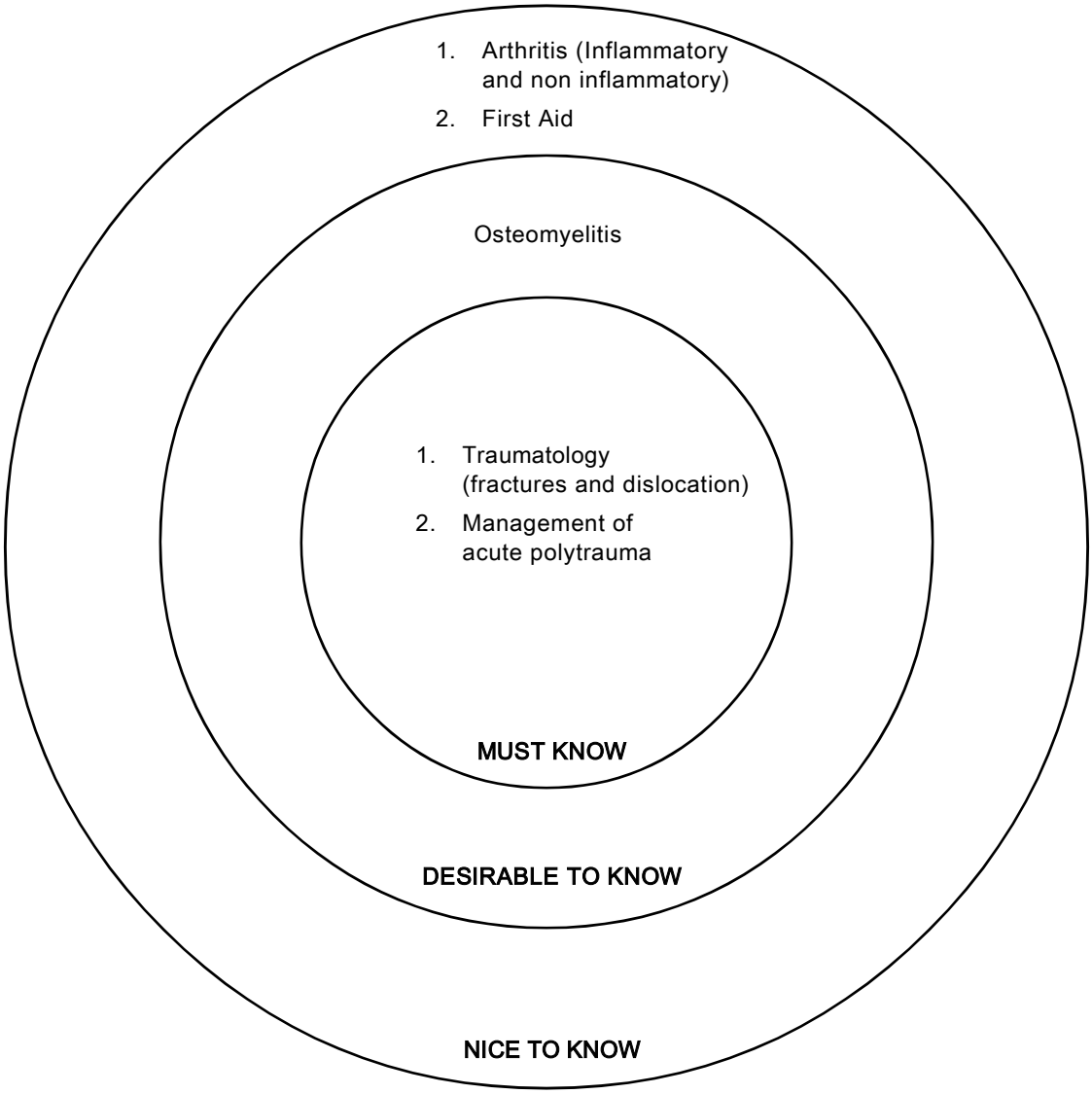
Table 1
Topics as mentioned by final year medical students in Orthopaedics to be of interest to them

Total No. of participants - 66

S. No.	Topics	Frequency	Percentile
1	Traumatology (fractures and dislocations)	35	100.00
2	Management of acute polytrauma	29	82.85
3	Osteomyelitis	18	51.42
4	Arthritis (Inflammatory & non inflammatory	14	40.00
5	First aid	14	40.00
6	Spinal injuries & Management of paraplegics	9	25.71
7	Intervertebral disc prolapse	8	22.85

S. No.	Topics	Frequency	Percentile
8	Congenital deformities including CTEV	7	20.00
9	Primary management of fractures in general	7	20.00
10	Post op rehabilitation/post injury rehabilitation	6	17.14
11	Osteoporosis	6	17.14
12	Low backache	6	17.14
13	Bone tumuours	6	17.14
14	Close reduction of # dislocations	6	17.14
15	Fracture neck of femur	5	14.28
16	Cervical spondylosis	5	14.28
17	Septic arthritis	5	14.28
18	Bandaging techniques and dressings	5	14.28
19	Intraarticular fractures	4	11.42
20	Disaster management	4	11.42
21	Recent advances in orthopaedics	4	11.42
22	Principles in geriatric orthopaedics	3	8.57
23	Sports orthopaedics	3	8.57
24	Osteomalacia	3	8.57
25	Diagnostic investigations in relation to orthopaedic diseases and fractures	3	8.57
26	Shoulder injuries	2	5.71
27	Surgical aspects of common ortho problems	2	5.71
28	Bone diseases	2	5.71
29	Ilizarov principles	2	5.71
30	Soft tissue trauma sprain/strains	2	5.71
31	Rib fractures	2	5.71
32	Cramps (calf pain)	2	5.71
33	Pathological fractures	1	2.85
34	Fluorosis	1	2.85
35	Joint replacements	1	2.85
36	Compartmental syndrome	1	2.85
37	Nerve injuries	1	2.85
38	TB spine	1	2.85
39	Surgical anatomy related to Orthopaedics	1	2.85
40	How to answer questions in theory & practicals	1	2.85

TOPICS AS MENTIOEND BY FINAL YEAR MEDICAL STUDENTS IN ORTHOPAEDICS TO BE OF INTEREST TO THEM



RECOMMENDATIONS FOR CORE CURRICULUM

Table 2

Methods as mentioned by final year students in orthopaedics to improve upon

ORTHOPAEDIC TEACHING

Total No. of participants - 66

S. No.	Topics	Frequency	Percentile
1	Demonstration of Xray, Instruments, implants, skeleton and bones models of joints	36	100
2	Clinical posting in batches	20	55.5
3	More case discussions	17	47.22
4	Consultants should teach and not PG's	15	41.6
5	Practical application and self practice of applying plastercasts, plaster slabs and bandages	15	41.6
6.	Predecided topics of teaching on display	15	41.6
7.	Audiovisual aids	14	38.3
8.	Case demonstrations during lectures	10	27.2
9.	Clinical examination and diagnosis	9	25
10.	Clarity of topic, audibility and visibility to all	8	22.22
11.	Regular classes	7	19.44
12.	Postings in Operation Theaters for observation	7	19.44
13.	Students should participating in teaching-learning process	5	13.8
14.	Part of study completion test	5	13.8
15.	Personal rapport with each students	3	8.3
16.	Room temperature should be comfortable	2	5.55
17.	Maintain student : teacher ratio	2	5.55
18.	Clinical postings also should have sitting arrangement	1	2.7
19.	More of teaching rather than asking i.e. explaning to avoid mugging of facts	1	2.7
20.	Indepth knowledge of subject to be provided	1	2.7
21.	Improve discipline in students	1	2.7
22.	Duration of lectures only 45-60 min.	1	2.7
23.	Post lunch didactic lectures to be avoided	1	2.7

Table 3
Reasons as to why certain topics selected by final year UNDERGRADUATE students were important for them

S. No.	Topics	Frequency	Percentile
A.	1. More common so required	23	100
	2. Problems met in daily routine life	18	78.20
	3. To be able to give basic life support, first aid and primary treatment in emergency situations	9	39.1
B	4. Family members have these problems	6	26.08
C	5. To avoid morbidity, mortality and complications from delay of treatment as a basic doctor	6	26.08
	6. One should know how to deal with emergency problems like polytrauma	3	13.02
	7. Basic topics in life all should know	4	17.39
	8. Essentiality of life polytrauma management		
D	9. They are more interesting	9	39.1
	10. Topics are easy and so useful in practice	3	13.04
	11. Simple injuries all MBBS doctors should know as basic doctors	2	8.69
	12. For interdepartmental activity	2	8.69
	13. For knowledge sake	1	4.34
	14. Can help people survive longer	1	4.34
	15. Helpful in pre PG enterance	1	4.34
	16. These topics Fascinate us	1	4.34
	17. Challenging problems so should know	2	8.69
	18. We feel them important	2	8.69
	19. Endemic in our area (Fluoroses)	1	4.34

* Compiled as per version of students themselves
** participants 66.

RESULTS

Analysis of the three self explanatory tables clearly depict the students perspective in the teaching-learning process in orthopedics at the undergraduate level.

In the intellectual domain the students have clearly shown a desire to learn more about osteomyelitis and other infections of bones and joints, traumatology, arthritis and related disorders, low back pain, bone tumours, osteoporosis, osteomalacia and related disorders of calcium metabolism, club foot, fluorosis and recent advances in orthopedics for the sake of knowledge.

In the psychomoter domain the students have shown interest in learning the following skills:

1. First Aid
2. Management of polytrauma
3. Management of paraplegia
4. Primary management of fractures
5. Close reduction of fractures and dislocations
6. Bandaging techniques and orthopedic dressings

7. Rehabitation.

In the affective domain for the development of attitudes students have shown a desire to learn the methodology of answering questions in written and practical examination as well as to be aware of the surgical aspects of common orthopedic problems.

The reasons given by them for the choice of these topics is that they find the incidence of these problems more in day to day life,in the hospital wards and OPD and even their family members have suffered from them.They feel that basic life support training is a must for every doctor and a training in emergency procedures, resuscitation, application of splints, transport of a spinal cord injury patient etc. are not only life saving but as a doctor it is their duty to teach these things to the lay public so that human life gets its highest priority.

They also feel that the involvement of the musculo-skeletal system in locally endemic diseases like Fluorosis too should be taught in its endemic belt.

Coming to the teaching learning methodology, a lot of suggestions have come from students like lectures should be pre-decided and should be displayed on the notice board.They should include a clinical demonstration of the case pertaining to the topic or should be aided by audio-visual aids.The lecture should not be of more than 40 to 60 minutes and should be preferrably taken in the pre-lunch session. There should be a clear audibility and visibility and teacher should pay attention to each student.Lectures should be taken by consultants as P.Gs.are found to be not that sincere towards teaching.

They have also emphasised that there shoud be more emphasis on demonstration of X-Rays,instruments,implants,bones and joint models Even in clinical postings there should be sitting arrangement for students during clinical demonstrations. A practical training into application of plaster casts, slabs, and reduction of simple fractures should be given and a posting in the operation-theatre should be there just for re-orienting them to theater discipline.

DISSCUSSION

(1) The final recommendations of the First National Seminar on Undergraduate Orthopaedic Teaching, held in the Department of Orthopaedics Medical College Jabalpur in March 1993 mentions that there is no standard MBBS undergraduate curriculum at present and it has to be built up from scratch. This curriculum should be need based depending on the requirements of a basic doctor working in that region. In this curriculum basic fundamentals should be taught leaving aside unnecessary details of the subject.

(2) Medical Council of India in its “Regulations on Graduate Medical Education 1997” has put the goal of making a student efficient for first contact surgical care and has laid down certain objectives based on recommendations of certain senior orthopaedic surgeons but these objectives need to be reassessed with time as “Curriculum Formulation is a continuous process.

(3) In the process of “Curriculum Reforms” a major part of this multifaceted task is identifying the essential knowledge, skills and attitudes required for undergraduate

students. It is clear that on one hand excessive focus on the biosciences may lead to curriculum overload and on the other there is a need to balance the depth of discipline based learning with the breadth required to develop effective clinical problem solving skills.

(4) Some of the common problems observed by us in undergraduate MBBS Orthopaedic Education are as follows:-

(a) Curriculum overload: There is a tendency by most of the teachers to teach the topics of their interest in the greatest depths. In an effort to show off their knowledge they forget the difference between under graduate and postgraduate education and try to teach more leading to curriculum overload. The students overburdened by this trend in all subjects gets highly loaded by useless information, data and facts and at times become less interested in basic studies. Some of the students who seek guidance from seniors and follow the trend of questions on the previous year papers try to guess the topics to be asked in exams, rather than study for the sake of knowledge and their future.

(b) Less and irregular attendance in clinical postings:

One of the prime causes of lack of attendance in clinical postings by undergraduates is the feeling that not sufficient attention is being paid over them. As their entry to a new department for clinical postings is initially full of apprehension, then due to lack of staff, or other administrative duties, court evidences, VIP visits, or a highly crowded OPD, if the consultants get busy and postgraduates act not concerned then the students feel neglected and stop coming to the department. As such due to the curriculum overload and fear of separate Pre-P.G. entrance exams they are short of time and want to quit from clinical postings. Different semesters with different subjects and repeated exams too cause a tendency to quit the clinical postings so that one gets time to read for these exams.

(c) Problems of Internship:

As the duration of internship in orthopaedics is just 15 days, not many skills can be taught in this period. Now if due to the preparation of Pre PG entrance exams, students do not attend internship regularly, then not much can be taught to them in this duration. Non monitored work, lack of structured teaching and less marks in MBBS or Pre PG entrance exams in orthopaedics make the desire to learn orthopaedics less and less.

Some departments at our place like Casualty, PSM, Forensic Medicine etc. are not strict towards attendance or teaching so the intern develops bad habits of not attending postings and

starts neglecting topics and departments which are essential too.

(d) **Lack of structured information** about batches posted for clinical postings or internship and clerical disinterest is also a major cause of students and teachers loosing interest in the subject. From the Dean's office in third year a roster is circulated batch wise and then over 3 years only students remember which batch and what month they have to attend. If instead a separate register is sent for each years batches till final year both the clerks students and teacher will get to know what has been taught and what is remaining. Ideally along with this register a curriculum with dates should be attached so that right from the beginning every student knows what will be taught and he can adjust himself to other concomitant subjects and their exams too.

(5) In an effort to standardize medical teaching through out the world and to come out with a standard curriculum so that medical graduates come up with certain minimal standards and can be exchanged throughout the world, the "World Federation of Medical Education" (WFME) has been conducting an "International Collaborative Programme for the Reorientation of Medical Education since 1984", the corner stone of which was the "Edinburgh Declaration (World Federation for Medical Education 1988 and was adopted by the World Health Assembly, WHA 1989" and the world summit recommendations on Medical education (WFME 1994).

They recommend the formation of a World Register of Medical Education which will constitute an instrument of quality assurance in Medical Education. They recommend a standard curricula of which atleast 60% should be adopted by all Registered Medical Schools and the rest 40% can come from the local needs of the community.

(6) The Father of Indian Orthpaedics "Late Prof. Dr. B. Mukhopadhyaya" M.Ch. Ortho. FRCS, FNAMS mentions that "it is essential, that undergraduates must be trained in the preventive aspects of orthopaedic surgery, as the scope of this specialty is in ameliorating the suffering of mankind. He has expressed concern saying that it is unfortunate that the training of undergraduates is not well planned."

(7) It is now very clear that with the advent of a separate Pre-PG Entrance Exam and the community recognizing only postgraduate doctors for treatment, the medical undergraduates work less for becoming a basic doctor and their all efforts go in cramming facts or MCQ's to get selected in post graduate training. This reduces the standards of undergraduate education drastically.

(8) In an effort to find out the orthopedic needs of MBBS students, Final year MBBS students posted in orthopaedics were given a questionnaire to find out ideal teaching-learning methods and

orthopaedic topics of their interest.

(9) By clubbing these selected answers on recommended topics and teaching-learning methods in the exsisting curriculum a truly need based curriculum can be formed.

(10) It has been found that Internship, as a period of learning essential skills is loosing its objective and it is like a period of paid holidays, when the students prepare for their Pre-P.G. Entrance Exams. As the marks in the exams in Orthopaedics too are very less, students just want to ignore this posting. This problem can be solved only by a uniform undergraduate curriculum made on the principles of our study, exams conducted centrally by a National Board of exam and Post Graduation allotment based on Merit during MBBS at National level.

Once the importance of curriculum and undergraduate education is revived, we will be able to make Better Basic Doctors of Tomorrow.

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ARTHROSCOPIC SHOULDER STABILIZATION

R. Vaishya

ABSTRACT

Arthroscopic treatment of anterior shoulder instability has evolved significantly during the past decade. Currently, most techniques include the use of suture anchors. A successful outcome is highly dependent on accurate patient selection. Preoperative evaluation, examination with the patient under anesthesia, and defining the pathoanatomy by a thorough arthroscopic examination determine the most effective treatment strategy. Technical skills include the surgeon's ability to accomplish anchor placement, suture passage, and arthroscopic knot tying. Various instruments and techniques are available to facilitate arthroscopic reconstruction. In properly selected patients and with good surgical technique, outcomes should approximate or exceed traditional open stabilization techniques.

INTRODUCTION

Arthroscopic reconstruction has become an accepted method of treatment for anterior shoulder instability. Despite early reports indicating greater failure rates compared with traditional open stabilization techniques, arthroscopic methods have evolved through improved understanding of disorders associated with instability, more careful patient selection and improved technology.[3,8,11,15,17-20,24,29] Contraindications to arthroscopic capsulolabral repair of instability are bony insufficiency of the glenoid from acute fracture or chronic erosion, large Hill-Sachs lesion, capsular rupture within its midsubstance or at its insertion, and the presence of poor quality capsular tissue.

The major advantages of arthroscopic repair versus open repair of instability are the possibility to identify and treat concomitant disease, lower morbidity and reduced pain, shorter surgical time and improved cosmesis.

ASSOCIATED PATHO-ANATOMY

Below the equator of the glenoid, the labrum is normally tightly approximated to the glenoid articular rim and any separation in this area is termed a Bankart lesion. The Bankart lesion is present in approximately 90% of all traumatic anterior shoulder dislocations.[25] Complete lesions of the superior labrum associated with destabilization of the biceps insertion may occur with shoulder instability. In addition to the Bankart lesion, recurrent dislocations also can cause stretching of the glenohumeral capsule and ligaments.

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Failure to address this component of the instability when doing an arthroscopic repair contributes to failure of the procedure.

SUTURE ANCHOR RATIONALE

Although there are no prospective randomized studies comparing arthroscopic and open repair, recent prospective reports of arthroscopic stabilization techniques have reported failure rates as low as the best open repair series, and also a high return to participation in sports.[3,4,11,15,18,29,36] The authors prefer repair techniques that use suture anchors with or without arthroscopically-tied knots. It is thought that suture anchors successfully overcome the known limitations of metallic staples, transglenoid sutures, and single point fixation devices. Suture anchor repair techniques allow for knots to be tied in the joint arthroscopically, avoiding the need for a posterior incision. Furthermore, recent technology has allowed for suture repair using anchors without knots, minimizing the need for arthroscopic knot tying. However the ability to tie secure knots arthroscopically remains an essential skill for arthroscopic stabilization procedure.

PATIENT SELECTION

History:

The history obtained from the patient is of great diagnostic value. For example, If the patient describes a sudden severe trauma sustained with the arm positioned in abduction and external rotation, and resulting in a dislocation, it is extremely likely that an avulsion of the anteroinferior glenoid labrum (Bankart lesion) has occurred. If, however, the patient reports minimal trauma causing a dislocation, such as reaching overhead, then capsular laxity is likely to be the major disorder. Recurrent multiple traumatic dislocations are likely to be associated with anterior glenoid rim erosion, a large Hill-Sachs lesion, and increased capsular laxity. Patient age and activity level are critical to predicting the risk for recurrence without surgical intervention. Those patients younger than 20 years or who participate in high-risk activities are at the highest risk for recurrence (approaching 90%-95%). Continued participation in collision sports or activities that require overhead use of the affected arm leads to recurrent episodes of instability in all age groups.[2,3,34]

Physical Examination:

Physical examination usually confirms the suspected diagnosis from a patient's history. The presence of muscle atrophy or ligamentous laxity is noted. Side-to-side comparisons of the amount of glenohumeral translation in the anterior, posterior & inferior directions are made. Provocative testing, including testing for apprehension with a relocation maneuver, is essentially diagnostic for anterior shoulder instability.

Radiographic Evaluation:

Routine x-rays & CT scans of the shoulder may show a bony defect in the humeral head or glenoid rim. Magnetic resonance imaging (MRI) with or without contrast, may be useful for clarification of capsulo-ligamentous & bony injury.

Examination under Anesthesia:

Most often, the examination under anesthesia supports the diagnosis established through the patient's history and physical examination.

Diagnostic Arthroscopy:

A systematic evaluation of the glenohumeral joint will show concomitant

disorders including anterior labral detachment, capsular injury, articular cartilage damage (glenoid and or a Hill-Sach's lesion), superior labial injury, and rotator cuff tears in decreasing order of frequency. The ability to easily pass the arthroscope from posterior to anterior and then into the axillary pouch is called the drive through sign. The drive- through sign is present with capsular laxity.[30]

Surgical Indications:

There is particular interest in treating young athletes with an initial anterior glenohumeral dislocation with early arthroscopic stabilization. Advantages include the ability to clearly define the pathoanatomy of the traumatic event and the increased biologic potential for healing of the injured structures. Furthermore, there usually is good quality tissues and minimal collateral tissue damage in patients who otherwise have a high likelihood of recurrence without surgical treatment. Patients with recurrent anterior instability despite attempts at physical therapy or a willingness to modify their activities, or patients who experience instability at rest or during their sleep, also are appropriate candidates for surgical intervention.

SURGICAL RECONSTRUCTION- SUTURE ANCHORS

General Principles:

The surgical approach involves a combination of secure reattachment of the anteroinferior labrum and reestablishing the proper tension within the inferior glenohumeral ligament complex. Capsular laxity is addressed by superior shift of the capsule, with or without the labrum, depending on the disorder. If the capsulolabral suture repair does not seem to address all of the capsular laxity, some surgeons prefer to use radiofrequency probes to supplement the repair with thermal capsulorrhaphy. If there seems to be insufficiency of the rotator interval region with persistent inferior laxity, then this region also is plicated with sutures. Thermal treatment to shrink or reduce the rotator interval frequently is ineffective. Finally associated superior labial injuries also are repaired at the time of the surgical procedure. In the rare cases with midcapsular rupture or avulsion of the humeral insertion, conversion to open reconstruction may be required.

Anesthesia and positioning:

Interscalene regional anesthesia, general anesthesia, or a combination of both may be used to decrease narcotic requirements and to aid in early postoperative pain relief. The authors preference in positioning is the beach chair position. The beach chair position facilitates efficient set-up and conversion to open approach is easier with the patient in this position compared with the lateral decubitus position. Alternatively, the lateral decubitus position with appropriately applied traction on the arm may be helpful when the repair requires extensive suture plication.

Arthroscopy:

A standard posterior portal is established within the soft spot located approximately 2 cm medial to the lateral acromion and 2cm inferior to the scapular spine. Two anterior portals (superior and inferior) are established using and outside in technique with a spinal needle to confirm appropriate orientation. These portals function as utility portals for instrument passage, glenoid preparation, suture

management, and knot tying. It is important to widely separate these anterior cannulas so that access in the joint is facilitated. Anchors are placed on the articulator rim through the anteroinferior cannula at an angle of approximately 45 degree to the frontal plane to avoid articular penetration and to minimize the risk of inadvertent medial placement along the scapular neck. Anchor placement is from inferior to superior with the first anchor placed at approximately the 5 o'clock position. Suture passage and knot tying is done before each subsequent anchor insertion. More recently, an anchor technology that allows for suture repair without knots has been developed. After anchor placement, assessment of anchor security, suture slippage, and knot security is done. Most surgeons use Number 1 or Number 2 braided, nonabsorbable material or prolonged absorbable, braided suture because of its strength and handling properties. This allows for secure knots that do not slip.

Thermal Capsulorrhaphy:

If, after the repair of the capsulolabral repair there seems to be persistent translation and capsular laxity, it can be reduced using the technique of thermal capsulorrahapy. [7,23,26] Thermal modification of collagen in capsular tissue has been shown experimentally and in initial clinical experience, to reduce capsular laxity.[7] The application of heat in a range of 65^{238}_{92} and 75^{238}_{92}C causes disruption of heat sensitive intramolecular bonds in collagen leading to a transition from an extended helical crystallinelike state to a shortened random configuration. This results in shortining of the collagen molecules approximately 20% to 30% of the original length. If thermal energy is used, it is applied to a lax capsule after all anchors have been placed and knots have been tied. Shrinking before suture placement increases the level of difficulty in assessing, approximating, and repairing the soft tissue to the glenoid rim.

Postoperative Rehabilitation:

Postoperative rehabilitation after arthroscope repair is identical to that after open reconstruction. Sling immobilization generally is required for 4 to 6 weeks depending on the methods used and the instability pattern treated. Active and unrestricted range of motion of the hand, wrist, and elbow begins immediately after surgery. Similarly, deltoid issometrics and gentle pendulum exercises begin immediately. Active forward elevation is restricted to 120 degree after the first 2 to 3 weeks to minimize the load on the capsulolabral region. At this point, external rotation also may be permitted to 30 digree to 40 digrees depending on the extent of repair. At 4 to 6 weeks, progressive resistive exercises begin. The patient is allowed to return to participating in sports between 18 and 36 weeks. Arthroscopic stabilization for glenohumeral instability has evolved rapidly during the past 15 to 20 years. The understanding of the pathanatomy associated with glenohumeral stability. Capsular tensioning must be evaluated critically at the time of repair. Arthroscopic techniques should provide a convincing intraoperative examination of stability. Judicious use of adjuvant thermal capsulorrhaphy may address residual capsular laxity that otherwise may lead to failure. Similarly, rotator interval closure, when indicated, may improve postoperative results. The authors strongly prefer the arthroscopic suture anchor technique

because it most closely duplicates the traditional open Bankart repair. Patient selection still is critical to the ultimate success of this procedure as is appropriately addressing all disorders at the time of surgery. Postoperative rehabilitation is not significantly different from that after traditional open techniques. Premature return to activities that stress the reconstruction likely will result in early failure. Surgeons are encouraged to practice these techniques in a forum of continuing education before doing them in the operating room.

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REPLANTATION OF UPPER EXTREMITY AT VARIOUS LEVELS
AN ANALYSIS OF 15 CASES FOR FUNCTIONAL OUTCOME AND FACTORS RESPONSIBLE FOR SURVIVAL

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ABSTRACT

Despite the fairly good return of motor function, Patients who have amputated hands replanted demonstrate unsatisfactory sensory recovery and severe cold intolerance. This observation confirms the extensive loss of sensory nerve fibers after nerve injury, but it is difficult to quantify reliable correlation between morphological findings of sensory and sympathetic reinnervation and clinical and neuro physiological variables. Fifteen cases of total hand Amputation at different level including proximal to wrist 3 cases (20%), wrist 2 cases (13.3 %), distal to wrist 3 cases (20 %), Fingers 4 cases (26 %), mid forearm1 case (6.66 %), midarm 1 case (6.66 %) and 1 case (6.66%) of thumb amputation was (Table 2) assessed for functional out come. The patient's ages ranged from 12 yrs to 60 yrs (average age 27.8 yrs), it includes 8 males and 7 females. Seven amputations were due to clean-cut sharp object, while 3 were by blunt object and 5 as a result of crushing and avulsion injury. The warm ischaemia time was extending 3-6 hrs in 5 (33.3 %), 6-8 hrs in 9 (60%) cases and 8-10 hrs in 1 (6%). Limb survival in terms of warm ischaemia time, limb replanted within 3-6 hrs, the survival was 4 (80.%) and replanted within 6-8 hrs duration 4 survived. One survived was brought after 8 hr of amputation. The functional results were assessed on an average of 5 yrs after replantation. To measure functional recovery we have used the MRC classification (Medical research council, 1954, table 7 & 8). Pinch and grip strength were assessed subjectively. Satisfactory recovery of useful hand function was observed in 8 patients (88.2%) one patient had anaesthesia over replanted limb. Recovery of nerve repair was poor in patients aged over 50 yrs and those who had proximal injury. Despite these findings 5 out of nine were highly satisfied with the result and have returned to work.

Key Words : Sensory recovery, Hand replantation, Functional outcome.

INTRODUCTION

From the ancient time the unique function and psychological attributes of hand have been recognized. With the Darwinians era the interrelationship of religion, philosophy and science received lengthy considerations as applied to the hand and formed the basis of sir Charles bells fascinating and brilliant work (1833). "The hand, its mechanism and vital endowments as evincing design".

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Detachment and vascular impairment no longer is the absolute indication for amputation, as vascular repair to restore circulation and to reattach amputated parts have become commonplace. The use of machinery in agriculture and rapid industrialization are responsible for increased incidence of hand trauma. There are a lot of common factors responsible for amputation of hand in different regional areas of India. Different scoring systems are used for assessment of severity of injury[18]. Paucity of personnel and facilities, Ignorance and lengthy delay in patients reaching a center are some of the factors that influence final outcome. Yet it is not in the interest of all patients to undertake the procedures. For most patients a successful replantation of a hand will be functional and useful.[16, 17,21, 22.]

Unfortunately these injuries need immediate and, often irrevocable decisions, as there is anoxia or ischaemia severe enough to threaten tissue survival. These are the only absolute emergencies in hand surgery in terms of hours.

Technical advancement in microsurgery has made replantation a routine procedure in most hand units throughout the world[23] In our country the demand of a vast population for basic medical care, the lack of trained personnel and financial constraints are some of the factors that restrict the use of this new advance. Ever since professor Carl Olof Nylen introduced the operative microscope in 1921,the technique of microsurgery has caught attention and imagination[8]. The unique functional capacity of the human hand has been extolled by anatomical observers since the dawn of medical history as a functional puppet. It responds to the desire of man.

The indications and contraindications for reattachment of the amputated parts are relatively difficult to define, and changing with experience, however success can no longer be equaled with tissue survival but must be measured only in terms of how useful the efforts prove to be for the patient[24]

Absolute indications

1. Clean-cut amputation of thumb, multiple fingers and at proximal level.

Relative indications

1. Amputation with localized crush
2. Single finger amputation

Relative contraindications

1. crush avulsion or extensive avulsion.
2. amputation at multiple levels.
3. Warm ischaemia is of more than 6 hrs.
4. Associated life threatening injuries or illness.

PATIENTS AND METHOD

Fifteen cases of total hand Amputation at different level including proximal to wrist 3 cases (20%), wrist 2 cases (13.3%), distal to wrist 3 cases (20%), Fingers 4 cases (26.66%), mid forearm 1 case (6.66%), midarm 1 case (6.66%) and 1 case (6.66%) of thumb amputation was replanted (Table 2). The patients ages ranged from 12 yrs to 60 yrs (average age 27.8 yrs), it includes 8 males and 7 females. Seven amputations were due to clean-cut sharp object, while 3 were by blunt object and 5 as a result of crush and avulsion (Table 1). The warm ischaemia time was extending 3-6 hrs in 5(33.3 %), 6-8 hrs in 9 (60%) cases and 8-10 hrs in 1 (6.66%). Limb survival in terms of warm ischaemia time 3-6 hrs duration was 4 (80.%), 6-8 hrs duration 5 cases. One hand survived although it was brought after 8 hrs

Table 1
Mechanism of injury

Sr. No	Mode of injury	No. Of cases
1.	Sharp object	9
2.	Thresher belt/ accident	5
3.	Water pump belt	1

Table 2
Survival rates of replanted part according to type of amputations

	Level of amputation	Number	Survival of parts
1.	Proximal to wrist	3	3
2.	Wrist	2	2
3.	Distal to wrist (through palm)	3	1
4.	Fingers	4	2
5.	Thumb	1	1
6.	Mid forearm	1	0
7.	Mid arm	1	0

of amputation.

Replantation in avulsion was tried because of dominant hand and they came within safe ischaemia tolerance time.

Operative Procedure: Except in children (2 cases) all were done under brachial plexus anesthesia with long acting bupivacain[7] under tourniquet application.

Replantation commenced by fixing the bone ends with k-wire in most of the cases. An AO plate was used only in stabilization of humerus and radius and ulna. Fixation was supplemented by repair of extensor tendon with 4-0 nylon sutures. The vascular clamp of 3V size was than applied, the ends of severed artery (digital in finger, ulnar in palm and wrist, brachial artery in forearm and arm amputation) cleaned of its periadvential tissue and repaired with four or five 10-0 suture. The dorsal vein repaired in similar manner in which it was clearly identified and prepared. In case of wrist and palm replantation, cephalic and basilic A. venous anstomosis was done before the arterial anastomosis. Similar preference given in mid arm replantation. . In eight cases one artery and two vein were anstomosed by 10-0 nylon suture, in 4 cases only one artery and one vein was anstomosed and in 3 cases of finger amputation no vein was anstomosed. In these cases a triangular cut was made at the tip of the finger and venous blood was allowed to escape. The cut site was kept continuously wiped with heparin soaked gauge to prevent spontaneous thrombus formation. Vein graft was used in one case of mid palm implantation to fill the gap of artery[16, 20]. Faciotomy was performed in forearm and arm implantation the mean operating time was 7 hrs. The metacarpal, proximal phalanx and radius and ulna bone was shortened according to site of amputation.

Epineural nerve repair was done in midarm, forearm, and wrist amputation. All three nerves, radial, median and ulnar were anstomosed. Digital nerve in finger repaired by epineurium-to-epineurium by 9-0 nylon. In wrist and forearm replantation flexor tendons were repaired and the muscles were approximated in arm and midforearm replantation. The skin was sutured with 5-0 nylon and hand immobilized in padded plaster. The arm was kept abducted and elevated throughout immediate postoperative period. The skin gap at the site of replantation was covered by split thickness skin graft. Total time taken ranged from 5-10 hrs (average 6-7 hrs).

Examination of vessels was done in all 6 cases of failed replantation. Thrombosed artery was collapsed and none showed recanalisation. Five veins had smaller circumferential mural thrombi with subintimal hyperplasia, observed microscopically[26]

Post operative

Post operatively all patients received IV fluids and heparin5000 units in 400 ml low molecular weight dextran as continues infusion for first 48 hrs. After that heparin was given 5000 units subcutaneous 6 hrly for further 10 days. Urokinase was not tried in any case[14]. Wound was clean on the second day and was dressed by in non-adhesive gauge. Blood transfusion was not recommended for initial 3 days Dicoumeral 100 mg three times a day was given for further 8 weeks

Follow-up

K- wires were removed after 6-8 weeks. Active movement and sensation were tested in 9-replanted hands. Patients were allowed slow control movement after 3 weeks of replantation wherever possible. Out of nine (60% of total) survived replanted hand, primary tendon and nerve repair was done in7 cases (77.77%). apart from secondary delayed tendon repair and tenolysis in 3 cases none required additional intervention. In two cases (22.22%) tendon and nerve repair was delayed for 8 weeks. Patients were satisfied with cosmetic appearance in all of the replanted fingers that survived.

K-wire infection was not noticed in wire track. There is scant information in literature regarding the incidence of wire track infection[12]. We are not aware of any studies which compare wire placement techniques.

After operation the follow-up was done up to 5 yrs. Hand was examined for power and movement. To be useful the hand must be accompanied by stable grafting surfaces and a sense of touch, Patient assessed for routine work like tying a knot, grasping a soft object, picking up a coin, fastening buttons, drawing a picture, writing, powergrip, picking up pencil and fumbling in pocket etc. most of the patients were unsatisfied with sensory recovery and dysaesthesia (Table 9).

RESULTS

Two cases of mid palm and wrist replantation were reexplored after 6hrs when arterial insufficiency was observed. Fortunately both survived[21]. One midarm amputation showed venous insufficiency which was reexplored but did not survive. The over all survival was 60 % and none of the hand survived, had avulsion amputation (Table 4). Hand survival noticed in guillotine amputations was 88.8%; crush amputation 33.3% and 0% in avulsion.

Out of nine (60%) survived hand, in 7 primary tendon and nerve repair was done. apart from secondary delayed tendon repair and tenolysis in 3 cases none required additional intervention. In two cases tendon and nerve repair was delayed for 8 weeks. Significant difference on final out come of motor function was not observed in delayed and primary repair of tendons. Patient was satisfied with cosmetic appearance in all of the replanted fingers that survived.

To evaluate functional recovery we have used the MRC classification (Table 7 & 8) measurement performed of moving two point discrimination, static two point discrimination, perception of heat and cold, temperature of skin, ability to sweat and pinch and grip strength. For motor

Table 3
Type of injury and amputation

Type of amputation	No. of cases	Survival
Guillotine	9	8 (88 %)
Crush	3	1 (33.3 %)
Avulsion	3	0 (0%)

Table 4
Time elapsed from amputation to revascularisation (Warm ischaemia time)

Warm ischaemia time (hrs.)	Guillotine	Crush	Avulsion	Survival
3-6	3	1	1	4
6-8	5	2	2	4
8-10	1	0	0	1

Table 5
Hand function; Two Point discrimination in replanted parts

Mm.	Guillotine	Crush	Avulsion	Total
5-6	3	0	0	3
7-8	2	0	0	2
8-10	3	0	0	3
Parasthesia	0	1	0	1

Table 6
Total active Motion (after secondary procedure)

Degree	Guillotine	Crush	Avulsion	Total
0-90	4	1	0	5
90-180	3	0	0	3
More than 180	1	0	0	1

Table 7 Classification of sensory recovery (MRC)

Code	Recovery or sensitivity
S0	No recovery
S1	Recovery of deep cutaneous pain
S1+	Recovery of superficial pain
S2	Recovery of superficial pain & some touch
S2+	As in S2 but with over response
S3	Recovery of touch, pain with disappearance of over response
S3+	As in S3 but localization of stimulus is good and there is imperfect recovery of two point discrimination
S4	Complete recovery

Table 8
Classification of motor Recovery (MRC)

M0	No contraction
M1	Return of perceptible contraction in the proximal muscles
M2	Return of perceptible contraction in the proximal muscles and distal muscles
M3	Return of function in proximal and distal muscles to such a degree that all-important muscles have sufficient power to act against gravity.
M4	All muscles act against strong resistance and some independent movements are possible
M5	Full recovery in all muscles

assessment the power and grip assessed subjectively. The grading system involved the sensory classification (S0 to S4) and motor classification (M0 to M5); excellent (M5S4), very good (M4 S3+), good (M3S3), gave useful results, Fair (M2S2S2+), and poor (M01S01+). (Table 9)

Good functional recovery and great patient satisfaction could be observed[14]. Loss of tactile sense may be secondary to irreparable nerve damage or to local tissue destruction. Nerve suture can restore good but rarely perfect sensibility[6].

Regarding postoperative functional recovery, 9 cases of replantation survived with little skin loss at the junction. Best survival was observed in thumb, wrist and proximal phalanx amputation.[8] 8.2% had satisfactory return of sensation after 6 months and only one which was severely crushed had anaesthesia. The two-point discrimination varies from 5- 10mm. (Table 6). Cold intolerance, numbness and parasthesia were the most common subjective symptoms (Table 9). Total active motion measured highest with guillotine amputations (Table 6). May et al mention that two point discrimination averages 11mm in replanted hand patients and hereby were satisfied with the appearance of replanted hand

On analysis, it is observed that three variables affect the final outcome. (1) Age; was the significant factor in sensory recovery for eg. 60 yr patient had poor functional recovery[17]. (2) The level of injury; more proximal lesions were associated with poorer results. Unfortunately we had no survival of mid arm and forearm replantation for comparison but it has other wise proved[22, 25]. (3) Type of trauma; always influence recovery. Results were useful after the clean sharp laceration in (88.8%). other variables also confirm the significant correlation with type of trauma and functional recovery.

The nail regenerated well when nail root were uninjured and when tissue in the nail root was preserved

Table 9
Clinical sensory/ motor recovery in replanted hand

Case	age	stereo-gnosis	protective sensitivity	cold into lerance	pain	dysaesthesia	ability to sweat	MRC
Wrist	8	yes	yes	yes	yes	yes	yes	M4S3
Midpalm	20	fair	fair	yes	yes	yes	poor	M3S3
Wrist	20	fair	yes	no	yes	yes	poor	M3S3
Wrist	25	yes	yes	yes	yes	no	fair	M4S3+
Wrist	26	poor	fair	no	yes	yes	poor	M4S3+
Fingers	30	yes	fair	no	yes	no	yes	M3S3
Fingers	38	yes	yes	no	yes	yes	yes	M4S3+
Thumb	40	yes	yes	no	yes	no	yes	M5S4
Wrist	60	poor	yes	no	yes	yes	no	M01S01

DISCUSSION

Functional outcome expected in major limb replantation is believed to be related to the level of injury, the extent of soft tissue damage, ischaemia time and age etc. The amputation occurs more commonly in manual workers. Young patients with sharp cut amputations can expect good return of function and replantation is always worthwhile. Aggressive debridment and bone shortening is recommended, especially with crush injuries. Intrinsic function and sensory recovery are often poor and secondary procedures will almost improve the function, although early physiotherapy may ameliorate this problem. Strong motivation is required by the patient, as the best result follows a rigorous postoperative regime of physiotherapy. It is possible to reeducate sensory functions.

The MRC classification for evaluation of sensibility is by no means perfect[16]. Wei et al (1981) postulated the criteria for grading of recovery based on ability to work, range of joint motion, and recovery of sensibility and muscle power. The higher percentage of good and excellent results obtained in Wei's needs further evaluation[16]. Nai J.E. observed in his series despite good pinch and grasp, the two-point test was poor. So he concludes that reliance upon the two-point test, as the major indication of reinnervation is questionable.[25, 6]

Technical advancements in microsurgery have made replantation a routine procedure in most hand units throughout the world[23]. For most patients a successful replantation of a hand will be functional and useful, despite appreciable tactile sensory deficits, which inhibit the use of the hand in fine manipulative work. Despite the wide range of test employed in this study many aspects of function are left unmeasured. We used MRC classification for assessment but it seems its not quantitative. Although observation indicates that sensory recovery in replanted hand is greatest problem in spite of good MRC scoring (Table 9). The reasons for the extensive loss of functional sensory recovery are not clear, one important reason is possibly the substantial neuronal death that happen after nerve injuries. Even after direct nerve repair, which will induce changes of neuronal terminal pattern within the central nervous system[17]. The static two-point discrimination test evaluates slowly adapting fiber receptor system, while the moving two point discrimination test evaluates the innervations density of quickly adapting fiber receptor system (Moving touch)[22]. The static two point discrimination test was proved to give accurate information (Moberg 1962) is now considered as irrelevant to sensory function[6] Parry and Salter (1976) have shown that two point discrimination in the contest of sensory nerve is an irrelevant way of assessing function and this test should no longer be used as an index of sensory function after nerve repair[6]. Many patients suffer both hyperaesthesiae and unpleasant paraesthesiae after replantation possibly due to the excess of C fibres in a neuroma and the spontaneous firing known to occur in the neuroma and in sprouts that course back along the nerve. Moreover we know that conduction velocity is reduced almost virtually indefinitely after nerve repair and it is bound to be altering its receptor innervation. It is possible to reeducate sensory function after replantation. Improved magnification and improved techniques at the most are likely to improve sensory function by 10% (Sutherland, 1977).

Only an individual fully trained and experienced in hand surgery can project the prognosis and course of events with sufficient accuracy to advise the patient wisely, with the best recommendation in many cases.

Amputation is an unpleasant affair, generating a very negative aura that must be consciously combated. The emotional responses of the patient passes through well define phases of responses. The disbelief and denial that this could happen has the series of disappointment in form of anxiety, implication of future, and thought for miracle solution related to hand replantation. It requires the same careful consideration, planning and technical skills required by any reparative hand surgery. Thoughtful and concerned management can do much to reduce the loss in a global sense, and the only measure of success is how well the patient is reintegrated in to normal life. Quick and efficient transport is essential for emergency cases needing replantation. Delayed transplantation and warm ischaemia are major problem in India. Lack of knowledge about the mode of cooling the amputated part is astounding even among medical personnel. The amputated part should be placed in a clear polythene bag surrounded by ice and bring it along with the patient to the microsurgery center. However, most people still bring such part wrapped in paper or cloth or immersed in water.

Replantation of amputated part is the best form of reconstruction, compared with free tissue transfer. Conventional methods of reconstruction are simple and safe and can be practiced by majority of orthopedic and reconstructive surgeons. However where microsurgical reconstruction alone can give best result, it should be the method of choice[10]. The practice of microsurgery in developing countries is closely linked with socioeconomic development[24].

Trauma to the limb is the major area where microsurgery has a very useful role in replantation .The proper selection of the cases is essential to achieve the best final outcome. Resurfacing with a graft or a distant pedicle flap cannot possibly replace the complex neurocutaneous system found in normal pulp tissue. Only through a transfer of the intact skin from another areas of the hand is possibly restoring the sensation. Beimer reported that 12 of the fingers survived with the use of composite graft without microvascular anstomosis[14] but studies shows that survival of case in witch amputation was due to crush injury is rarely obtained with a composite graft, thus restoring circulation is essential in replantation of fingers.

The cortical representation obviously altered when a nerve and its sensory end organs are transferred but reorientation is readily achieved if the recipient hand has useful movement. Despite of many guideline and scoring systems to evaluate the functional outcome, the most challenging decision involved in the care of injured patient is weather or not to attempt salvage of severely injured hand. However amputation in and itself is not the sole indication for replantation and decision to try to replant an extremity is truly mutifactorial. In general mechanism and zone of injury have been shown to have the most significant impact on outcome[14].

Despite of complexity of various operative procedures, their single purpose is achievement of prehension, grasp, and a sensory hand. Although many observers have claimed good results, we are yet to draw our conclusion, as the number of cases and follow-up period is short.

Figure 1
Amputation Hand From Distal To Wrist

Figure 4
Midarm Amputation

Figure 5
Amputated Limb

Figure 2
Replanted Hand

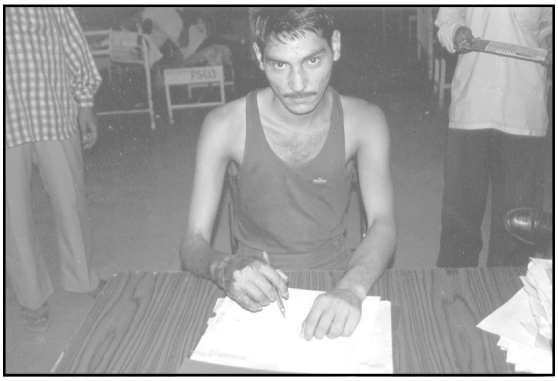

Figure 3
Functional Out Come, Pinch & Grasp

Figure 6
Midarm Replantation

ACKNOWLEDGEMENT

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OPEN REDUCTION AND INTERNAL FIXATION OF DISPLACED GLENOID FRACTURE WITH COMMUNITED FRACTURE SCAPULA

A CASE REPORT

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ABSTRACT

Displaced fractures of glenoid fossa are an uncommon and anatomically diverse group of injuries.The success of a treatment protocol that encompassed appropriate preoperative imaging, injury pattern assessment,, prudent approach choice and a comprehensive reduction and fixation tactic was used. Anatomic reduction, rigid intenal fixation and early mobilization restored a full painless range of motion in our case. Our result was rated good according to Constant and Murley Scoring system.

Key Words : **Glenoid fractures - Open reduction and internal fixation**

INTRODUCTION

Fractures of the scapula comprise no more than 1% of all the fractures. Approximately 10.% involve the glenoid cavity and 10% of these glenoid fractures are displaced. Therefore substantially displaced fractures of the glenoid are very uncommon comprising only 1 of every 10,000 fractures. Although rare, glenoid fractures can lead to considerable morbidity due to either chronic shoulder instability or degenerative joint disease or both. Associated injures are seen in upto 80% to 95% of patients with scapular fractures. The most common as per the literature include rib fractures, followed by upper extremity fractures, lung injury, and pneumothorax, clavicle fractures, anterior or posterior shoulder dislocation and brachial plexus injury.

Displaced intra-articular fractures of the glenoid are rare fractures as scapulae are well protected by surrounding musculature (Rowe 1963 : MC Gahan et al 1980 Hardegger et al 1984). However with increasing incidence of high energy trauma, these complex fractures are no longer rare among multiply-injured patients (Findlay 1937. Zdravkoric and Damlotl 1974" Imatani 1975: Wilber and Evans 1977: MC Lennan and Ungersma 1982. Armstrong. And Van Der Spul 1984).

The intra-articular glenoid fractures are classified by Ideberg based on anterior (a) and posterior (b) glenoid rim (Type 1) Horizontal fracture involving the inferior glenoid (Type 2) superior glenoid fracture (Type 3) both scapular neck and body (Type 4) and comminuted fracture (Type 5).

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Heggland's modification of Ideberg classification for glenoid fractures.

Type	Description
I (a, b)	Anterior (a) or posterior (b) avulsion fracture
II	Transverse with displacemnt of inferior portion of glenoid and neck.
III	Transverse. runs obliquely upward from glenoid fossa
IV	Horizontal, thorough glenoid neck, scapula body
V (a,b,c)	Combines types II (a) and III (b) or both (c)
VI	Severely comminuted glenoid fossa fractures.

Our case was grouped under type 5 Ideberg and Hegglands both

Indications for operation include

(1) an articular step off of five millimeters or greater

(2) Severe seperation of articular surfaces.

(3) Inferior displacement of an inferior glenoid fragment with associated inferior subluxation of humeral head

(4) Severe disruption of the superior suspensory complex of the shoulder associated with separate superior glenoid fragment.

When a fracture of the glenoid cavity is suspected plain radiographs and computed tomography (CT) are necessary for diagnosis. True anterioposterior, axillary, lateral and west point view should be performed The standard preoperative radiological evaluation included a 40 degree posterior oblique, a 60 degree anterior oblique and an axillary view.

CASE REPORT

G.K. was a 57 year old man who fell down and landed on the postero- lateral aspect of his left shoulder in bathroom. The patient developed immediate pain in glenohumeral region and inability to abduct his arm. There were abnormal physical findings in the region (swelling, crepitus, ecchymosis and so on) but the neurovascular status of the extremity was normal. Passive motion consisted of abduction to 30 degree, forward flexion to 30 degrees. external rotation to 20 degrees and internal rotation to 10 degrees AP and Axillary radiographs demonstrated a displaced intra-articular glenoid fracture with 4 part fracture scapula. Axial CT cuts demonstrated fractures of glenoid fossa precisely. Reconstructions in the coronal plane (Or tomography in the AP plane) gave us vital information.

Open Reduction and internal fixation of left glenoid was performed. Posterior inverted U approach of Abbot and Lucas for posterolateral aspect of left shoulder was used. Fracture site was exposed by seperation of infraspinatus and teres minor. During surgery, it was noted that tendon of infraspinatus was also torn. The fracture was reduced and rigid fixation was obtained using two 4.0 mm cannulated cancellous screws of 40 mm size. Each infraspinatus was repaired along with capsule and labrum.

Postoperatively, the patient was placed in velpeau sling and began on passive cirumduction exercises which progressed to active assisted and finally active exercises by 6 weeks. On follow up at 6 months the patient had a full painless range of motion. Radiographs demontrated

Figure 1
Pre-op X-ray of glenoid fracture

Figure 2
MRI of the same case

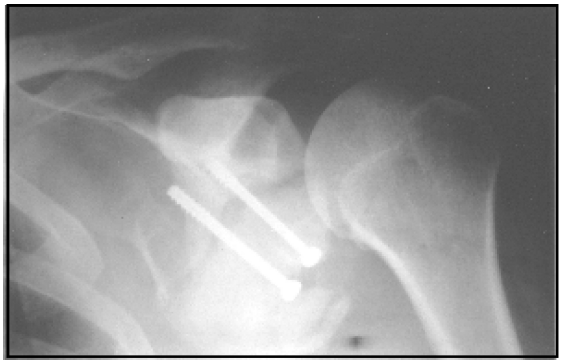

Figure 3
Post Op. X-ray showing osteosynthesis

no evidence of the migration of screws. The outcome was determined using the Constant and Murley score which came out to be 94.

DISCUSSION

Displaced fractures of the glenoid fossa are an uncommon injury plagued by poor outcome when treated non-operatively Plain radiographs, treatment planning modalities and accurate diagnosis should lead to a prudent surgical approach. We preferred the posterior approach because of lesser injury to soft tissue and minimized risk of intraoperative axillary or suprascapular nerve paresis. Rigid internal fixation and early mobilisation was the goal and has resulted in a painless full range of motion. Hardegger et al have recorded the largest series of surgically treated scapular fractures which included 12 involving the glenoid. They recommended open reduction and fixation of incongruent fractures of the glenoid. The use of the Constant and

Murlay score is recommended by the European society of Shoulder and elbow surgeons.

Open reduction and internal fixation should be seriously considered for active patients with displaced glenoid fractures and a prolonged post operative rehabilitation program is required. Postoperative complications are few and an overall excellent clinical outcome may be anticipated.

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BILATERAL SIMULTANEOUS SYMMETRICAL ANTERIOR DISLOCATION OF SHOULDERS - A CASE REPORT

C.S. Yadav* H.L. Nag M. Pawar S. Lalit S. Agarwal K. Doomra

ABSTRACT

We report a case of symmetrical bilateral dislocation of shoulders in a 24 years - old healthy man occuring after a trivial injury. Symmetrical bilateral dislocation of shoulders are uncommon that too after a trivial injury in healthy young person. A brief and relevant reveiw of literature is presented.

CASE REPORT

A 24 year - old man reported to us in the casualty with complaints of pain and inability to move shoulders freely since one day. He was warking comfortably on his typewriter sitting on a relatively weak wooden chair. Probably due to a sudden imbalance of chair, he fell down on the floor and developed this problem. He was asymptomatic before this incident. He did not had any feeling of giddiness or loss of consciousness before or after the fall. He did not had alcohol prior to this incident, nor he had similar incident in the past. He went home and took analgesic tablets. Next day he came to the casualty with no relief of symptoms.

On examination of both upper limbs, the signs of anterior dislocation of shoulders without distal neuro-vascular deficit were present. X-rays of shoulders (Fig : 1A and 1B) confirmed anterior

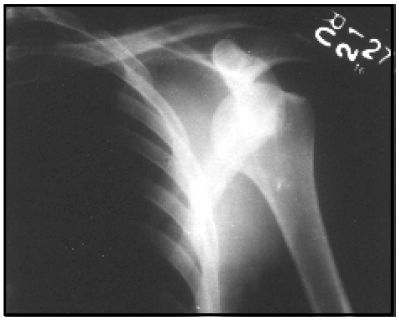

Figure 1A
Pre-reduction x-ray photogarph showing anterior dislocation of right shoulder

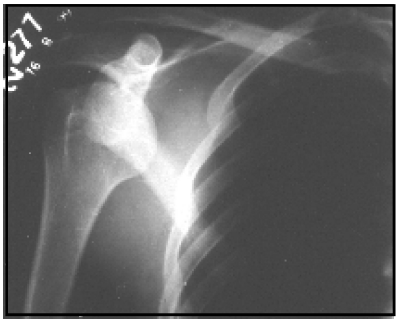

Figure 1B
Pre-reduction x-ray photogarph showing anterior dislocation of left shoulder

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Figure 2A
Post-reduction x-ray photograph
of right shoulder

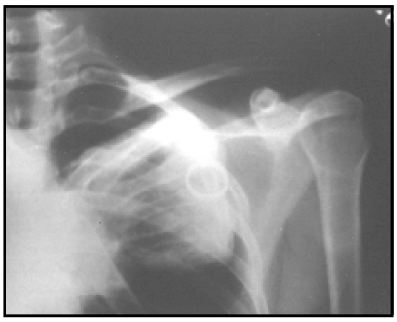

Figure 2B
Post-reduction x-ray photograph
of left shoulder

dislocation of shoulders. Both shoulders were reduced in casualty by Kocher's maneouver under sedation (Fig : 2A and 2B) and limbs were immobilized with arm pouch and slings. On third week, limbs were freed and mobilization was started. Detailed neurological and psychiatric assesment were performed which ruled out the possibility of epilepsy, myopathy, neuropathy and psychiatric disorders. This was the first dislocation of his shoulders. He never had any evidence of recurrence of dislocation of both shoulders till he was last seen 26 months after the last incident.

DISCUSSION

Bilateral shoulder dislocation was first described in 1902 in patients with muscular contractions as a result of camphor overdose[1]. Bilateral dislocation of shoulders are uncommon[2,3]. Of the cases of bilateral dislocation of shoulders, majority are posterior dislocation and occur secondary to seizures assocaited with epilepsy, electrocution, hypoglyeaemia and in emotional disturbed patients[2-6]. Bilateral anterior dislocation is rare and occurs commonly following significant trauma[7] .

A trivial injury, like fall from a working chair on the floor, leading to simultaneous symmetrical anterior dislocation of shoulders in a healthy young man with no evidence of any attributing factors, as in the present case report is difficult to explain. Considering the nature of this injury, we subjected this patient for detailed neurological and psychiatric evaluation in subsequent follow-ups. This did not help us to explain the simultaneous bilateral dislocation of shoulders. X-rays confirmed the dislocation to be symmetrical. CT scan or MRI were not done in this case. Delayed diagnosis and hence treatment are described in bilateral dislocation of shoulders[8-10], but it was not so in our case. On subsequent follow up both shoulders were stable in all directions, retrospectively rulling out pre-injury possibility of multidirectional instability causing bilateral dislocation of shoulders as a consequence of a trivial fall.

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POST-TRAUMATIC FRACTURE PELVIS WITH SIMULTANEOUS BILATERAL FEMORAL NECK FRACTURE IN A CHILD

A CASE REPORT

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ABSTRACT

We are presenting a rare case report of Posttraumatic simultaneous fracture Pelvis with bilateral femoral neck fracture in a 6year old child. Till date we haven't found any such injury reported in English literature.

Key Words : **Bilateral, Fracture neck femur, Fracture Pelvis, Child**

INTRODUCTION

Fracture of femoral neck in normal children is rare. When it occurs, it is usually due to severe high velocity trauma[6] or a pathological process affecting the bone [1,2,4.6,8]. Fracture Pelvis in children is also uncommon. Both these injuries occuring together is pointing towards the changing trends in the types of high energy trauma.

CASE REPORT

A 6 year old female child had a fall from stairs of about twenty feet and on reaching the ground a bicycle fell on her. There was no h/o unconsciousness, vomiting, ENT bleed or seizures. The child presented to us in the orthopaedic emergency within half an hour of the injury with complaints of severe pain in lower part of abdomen and bilateral thighs along with swelling and inability to move both the lower limbs. On clinical examination the child was conscious oriented and her vitals were stable. Bilateral anterior hip joint tenderness was present along with crepitus on left side. Left lower limb was externally rotated and shorter as compared to right side. Pelvic compression test was positive. Patient had no distal neurovascular deficit and no respiratory difficulty. Moderate amount of swelling was present extending from lower abdomen to bilateral thighs. X-ray of pelvis with bilateral hips showed displaced transcervical femoral neck fracture on right side, undisplaced transcervical femoral neck fracture on left side along with bilateral fracture of superior and inferior pubic rami along with symphysis pubis disruption. Patient was immediately splinted with bilateral Thomas knee splint with below knee skin traction

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Figure 1
Immediate post-op x-ray showing bilateral osteosynthesis by 4mm cannulated cancellous screws

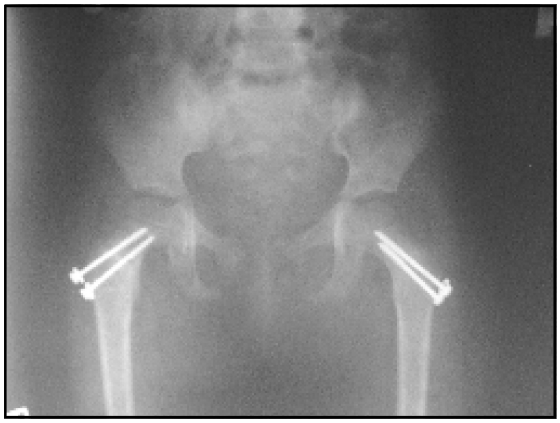

Figure 2
X ray at late follow up showing fracture union

and a pelvic binder was applied. Patient was operated, closed reduction of both femoral neck fractures was done and they were internally fixed with two 4.0 mm cannulated screws on either side and hip spica applied to compress the symphysis pubis disruption [Figure 2, 3]. The patient was discharged 3 days after the injury in spica.

DISCUSSION

Fractures of pelvis in children are unusual. Pelvic fractures in children differ from adults in that there is more malleability in bones of children and second more elasticity in joints so as double break in pelvis ring is unusual[3,7,9]. Bilateral fracture of superior and inferior pubic rami is also known as straddle fracture and type IV according to classification of Torode and Zieg. Simultaneous bilateral fracture of femoral neck is a rare injury; usually the result of severe trauma or convulsions and the victim is usually a young male. Since the fracture of the neck of femur are rare [1,2,4,5,6,8,10] in children and account for <1% of all paediatric fractures[10]. Hamilton[5] believes that most orthopaedic surgeons will see only a few of this type of fracture in children in their entire professional career. Bilateral simultaneous femoral neck fractures, most of the time, occurs due to some pathological systemic condition e.g. Gauchers[8], Hypocalcaemic seizures[2], Hyperparathyroidism and High voltage electric shock[11]. We have not found any case report in English literature about posttraumatic bilateral simultaneous femoral neck fracture in a child with pelvis fracture. In our case the bilateral fracture of the femoral neck and fracture pelvis could have occurred because of the combination of two different injuries the child sustained one after the other. Our aim with this case report is to emphasize the need of careful physical examination and appropriate X-rays to find the occult fractures after high velocity trauma in children and also to highlight changing patterns of injury with change in the living conditions of mankind.

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SUBCLAVIAN STEAL SYNDROME AS A RARE CAUSE OF VERTIGO
A CASE REPORT

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Key Words: Vertigo, Subclavian Steal Syndrome

INTRODUCTION

Vertigo, defined as 'hallucination of self or environmental movement' is a common symptom seen in clinical practice. Though various causes of vertigo have been described, it most often results from disturbance of the vestibular system while subclavian steal syndrome is mentioned as a rare cause of vertigo.

We report a case who had recurrent vertigo after initial satisfactory response to medications. She had typical clinical symptoms and signs suggestive of subclavian steal syndrome. Imaging studies confirmed the diagnosis and the patient was successfully managed by stenting of the stenosed segment of the left subclavian artery.

CASE REPORT

A 63 years old female presented with vertigo of 1 month duration. It was not associated with nausea or positional change. Patient was a known hypertensive and diabetic. On examination, there was full range of movements at the cervical spine with no precipitation of vertigo on neck movements. The ENT examination did not reveal any abnormality. Radiographs of the cervical spine revealed early degenerative changes. There was no nystagmus or neurological deficit. Patient responded satisfactorily to medications.

The patient presented again after 6 months with severe vertigo, weakness of left upper limb, precipitated by exertion. The left radial and subclavian pulse was weak. There was difference in the blood pressure on both sides (Rt. 170/100 mm Hg and Lt. 130/66 mm Hg.) The neck movements induced vertigo and the Rhomberg test was positive. There was a palpable and audible bruit over the left subclavian artery.

In view of the above findings, Doppler study of the arteries of the neck was done. It revealed classical changes of subclavian steal syndrome including reversal of flow in the left vertebral artery (1a and 1b).

Patient underwent angiography, which confirmed a total block in the left subclavian artery proximal to the origin of vertebral artery (Fig. 1c). The stenotic segment was

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successfully managed by stent inserted by interventional radiologist (Fig. 1d). Two years after the procedure, the patient was asymptomatic with no evidence of restenosis.

DISCUSSION

Vertigo is usually due to a disturbance in the vestibular system. The vestiblar system is one of the three sensory systems subserving spatial orientation and posture, the other two are the visual system and the somatosensory system that conveys peripheral information from skin, joint, and muscle receptors. The three stabilizing systems overlap considerably to compensate for the deficiencies of other systems. Vertigo may represent either physiologic stimulation or pathologic dysfunction in any part of the three systems.[1] Subclavian Steal Syndrome (SSS) is mentioned as a rare cause of vertigo and therefore a high index of suspicion and detailed clinical examination are essential for its diagnosis.

Subclavian Steal Syndrome (SSS) refers to subclavian artery steno-occlusive disease proximal to the origin of the vertebral artery and is associated with flow reversal in the vertebral artery (Fig. 2).

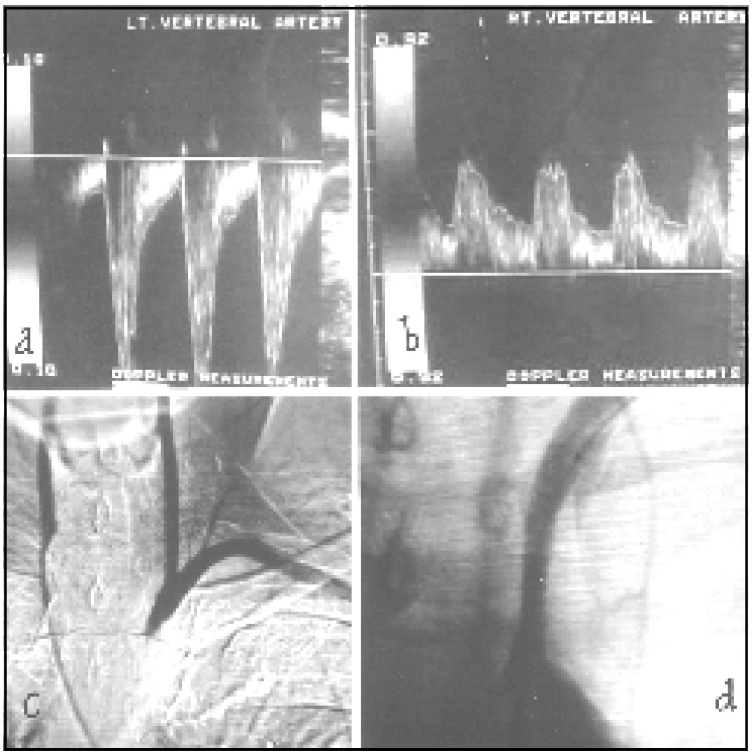

Figure 1
(a) Reversal of flow in left vertebral artery
(b) Normal flow in right vertebral artery on Doppler study (c) Total block in the left subclavian artery proximal to the origin of vertebral artery with reverse filling of the left vertebral and subclavian artery on angiography (d) Restoration of flow in the left subclavian artery after placement of stent.

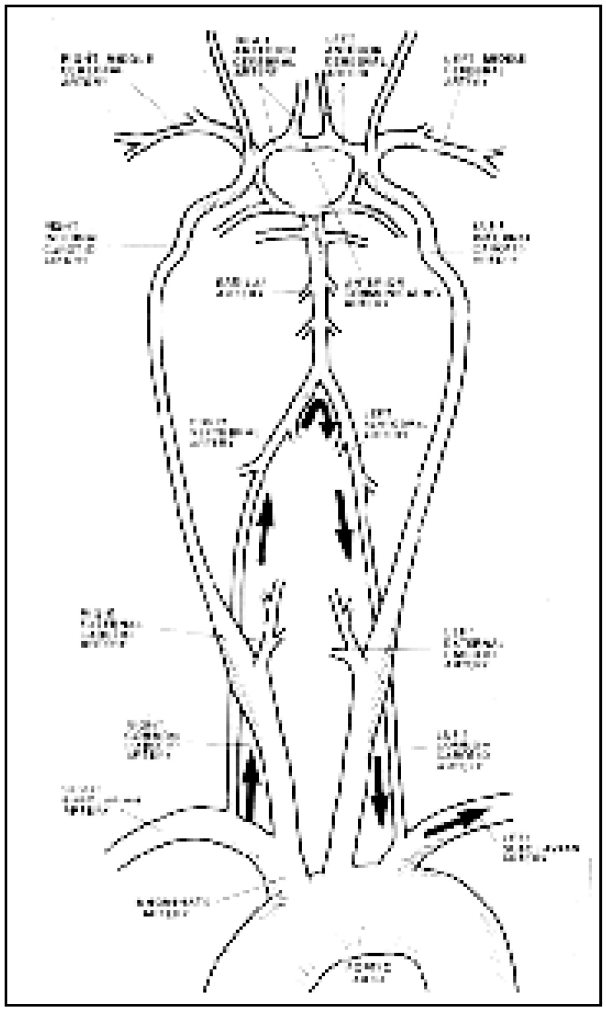

Figure 2
Schematic diagram showing route of flow in Subclavian Steal Syndrome

Contorni first described retrograde flow in the vertebral artery in 1960. Reivich in 1961 first recognized the association between this phenomenon and neurologic symptoms.[2] Fisher referred to this combination of retrograde vertebral flow and neurologic symptoms as subclavian steal syndrome (SSS), suggesting that blood is stolen by the ipsilateral vertebral artery from the contralateral vertebral artery.[3] It was later suggested that such "steal" may cause brainstem ischemia and stroke, either continuously or secondary to arm exercise.

The primary lesion causing vertebral artery flow reversal is proximal subclavian artery stenosis or occlusion, resulting in decreased blood pressure in the arm distal to the steno-occlusive disease. This

pressure reduction initially causes ipsilateral vertebral artery blood flow alteration provided the subclavian disease is proximal to the origin of the vertebral artery. Ultimately, a flow reversal occurs in the ipsilateral vertebral artery as compensatory collateral to the compromised vascular territory beyond the subclavian steno-occlusive lesion.

Arm symptoms may be provoked by an increased blood flow requirement to the compromised upper extremity (eg, during arm exercise or after producing peripheral reactive hyperemia by arm cuff inflation), or, alternatively, by limiting vertebral compensatory flow to the subclavian artery (eg, during neck movements). Vertebrobasilar symptoms provoked by ipsilateral arm exercise are considered a characteristic, though rare, feature. Neck movement may also provoke symptoms. This was typically seen in the present case and suggested a possibility of SSS.

The incidence of SSS varies between 6.4 to 23% depending on the presenting symptoms, selection of sample from population and the investigation used. SSS is most frequently described in Caucasians because of increased incidence of atherosclerosis in this population. In the Far East, as many as 36% of patients undergoing surgical management of subclavian steal syndrome have Takayasu arteritis as the etiology, with atherosclerosis accounting for the remaining patients. Nonatherosclerotic etiologies are rare in Caucasians.[4]

SSS is more common in males than in females (1.5-2:1). However, when Takayasu arteritis is causative rather than atherosclerosis, there is a female predilection. SSS usually affects people older than 50 years when the disease is secondary to atherosclerosis while SSS presents far earlier (<30 y in 90%) when Takayasu arteritis is implicated.[5]

The ratio of left-sided to right-sided SSS is 3-4:1; most likely, this relates to turbulence-related atherosclerosis in the proximally more acutely angled left subclavian artery.

Commonly asymptomatic, subclavian artery steno-occlusive disease associated with flow reversal in the ipsilateral vertebral artery is diagnosed as an incidental finding during Doppler US examination of the carotid and vertebral arteries. Symptoms that occur (eg, dizziness, unsteadiness, vertigo, visual changes) most typically are related to vertebrobasilar and posterior cerebral circulation ischemia. Arm ischemia occurs, causing arm claudication and rest pain. SSS can be associated with hemispheric or global cerebral symptoms such as focal sensory or motor loss, dysphasia, and unilateral visual disturbances.

Weak or absent radial and ulnar pulse in the presence of ipsilateral reduced blood pressure (change is >20 mm Hg) when compared to the contralateral arm suggests SSS. A bruit may be localized to the proximal subclavian artery.[5]

Colour Doppler US is the preferred examination. SSS most commonly is diagnosed incidentally during carotid and vertebral artery color Doppler US. The earliest waveform change associated with subclavian artery stenosis is a transient decrease in ipsilateral vertebral artery midsystolic velocity. With progressive stenosis of the subclavian artery, midsystolic velocity slows further, then reverses direction until both systolic and

diastolic flow are reversed. Total vertebral artery reversal of flow correlates with severe subclavian artery stenosis or occlusion.[5]

CT scan with contrast enhancement as well as MR Angiography have been described but have their limitations in the diagnosis of SSS. Conventional film-screen or digital angiography is the traditional test used for the diagnosis of SSS.

The goals of treatment of SSS are to restore antegrade vertebral artery flow, alleviate cerebral hypoperfusion and its associated symptoms and improve arterial perfusion to the upper extremity.

Percutaneous transluminal angioplasty as done in this case initially has a high rate of technical success. While there are reservations about long-term patency, researchers have reported 3-year patency rates as high as 86%. Stent placement provides a higher initial success rate compared to angioplasty, particularly when treating subclavian occlusion. Initial reports suggest improved patency rates (3 y up to 90%) when compared to angioplasty alone.[5]

Surgical revascularization can be done using Carotid-subclavian bypass (CSB) with either synthetic graft or saphenous vein graft. Carotid-subclavian transposition (CST) is favored if there is distal embolization from the subclavian lesion. Axilloaxillary bypass is favored if ipsilateral carotid disease is present that cannot be treated.[5]

In the case described here typical clinical symptoms and signs suggested the possibility of SSS, which was confirmed by Doppler US examination and successfully treated by percutaneous angioplasty technique. It is suggested that examination of radial pulse as well as blood pressure on both the arms should be routinely done in patients presenting with vertigo to diagnose SSS.

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MASSIVE OSTEOLYSIS (DISAPPEARING BONE DISEASE)
A CASE REPORT

G.N. Khare

ABSTRACT

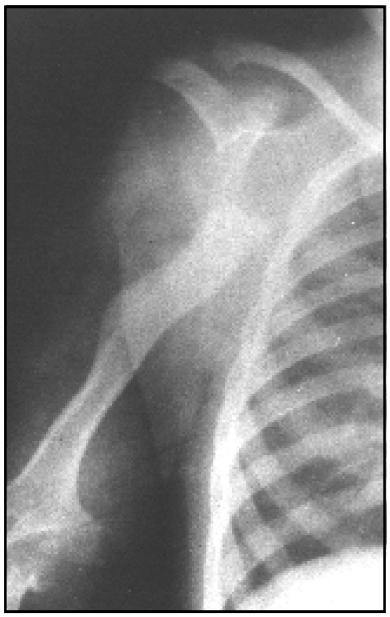
A case of massive Osteolysis in a three years old child is reported for its rarity. The relevant literature on the subject is also reviewed.

Key Words : **Osteolysis, Fibro-angioma**

CASE REPORT

A three and half years old female child was brought to the O.P.D. with the complaint of weakness and flailness of left shoulder. The child fell down eighteen months earlier and was treated by a local quack who gave massage and a local ointment. She developed blisters over skin which subsided in due course but the shoulder became flail. Examination revealed prominent veins over the shoulder. The upper end of the humerus could be easily moved in and out of the glenoid. There was no neurovascular deficit in the limb. Active movements of the shoulder were restricted in only terminal 10 to 15 only. Full passive movements were present. X-ray revealed absence of the head and neck of the humerus (Fig. 1). The biopsy was taken and the typical changes of massive Osteolysis (replacement of bone by fibro-angiomatous tissue) confirmed the diagnosis (Fig. 2).

Figure 1



X-ray of the patient showing absence of the upper part of the humerus.

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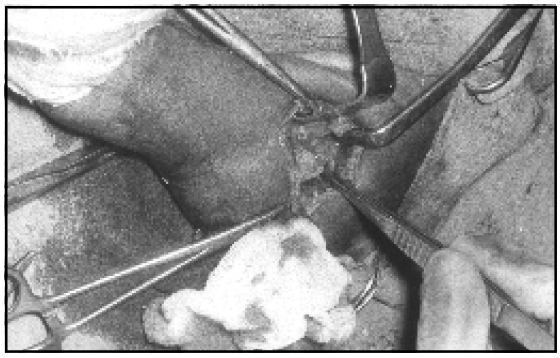

Figure 2
Peroperative photograph of the patient during open biopsy.

DISCUSSION

This rare disease is thought to be related to haemangiomatous change in the bone (Gorham and Stout)[3]. It can affect any bone and has commonly associated with pathological fracture and progressive absorption of bone. The treatment of this disease is difficult because fractures fail to unite and grafts are absorbed by invasion of haemangiomatous tissue. Successful results have been reported from prosthetic replacements of the diseased bones (Aston[1], Blundell-Jones[2], Poirier[4]).

The patient is often a young adult with history of a minor injury who presents with pain, stiffnes and swelling of a large joint. X-rays show varying degrees of absence of the boney structures by absorption with extension towards joint surfaces without any bony reaction. Pathology shows replacement of both bone and marrow by a vascular fibrous tissue containing dilated capillaries and other thin walled blood vessels. Indeed the tissue has been described as cavernous or sinusoidal vascular tissue. Osteoblasts are few in number as are osteoclasts. Its cause is unknown although it is regarded by some as a haemangoimatous condition, and therefore based upon some vascular disturbance.

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TOTAL KNEE REPLACEMENT - OUR EXPERIENCE IN A PUBLIC HOSPITAL SET-UP

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ABSTRACT

Total knee replacement in a public hospital set-up has so far been a taboo in India. The present study reveals that if particular painstaking attention by the team is taken at every step of preoperative, operative and post operative phase and the basic precautions are observed with a disciplined attitude, success can be almost always assured and cost of the operation can be kept within the reach of average population. Twelve total knee replacement in seven patients, four women and three men, have been performed at GSVM Medical College, Kanpur during Dec. 2002 to Jan. 2004, eight for osteoarthritis with varus knee and variable flexion deformity and four for rheumatoid arthritis with valgus knee and flexion deformity. Five patients had bilateral operations. All were susccessful. Only one case had superficial infection that healed without disturbing the posoperative care and physiotherapy. One case had a transient neuropraxia of lateral popliteal nerve. Cold compressions in the early postoperative phase improves function while reducing pain and blood loss.

Key Words : Total knee replacment

INTRODUCTION

Knee joint is among the strongest and most complex joint of the body and its satisfactory functioning is directly related to the activities of daily living. The joint is affected by various arthritic conditions out of which osteoarthritis and rheumatoid arthritis are the most common. In osteoarthritis ordinarily medial side of the joint and patello-femoral component are affected first and difficulty and pain in going up and down stairs may be the first symptom. With time it usually results into varus knee and with contracture of posterior capsule flexion deformity starts. If the patient does not take remedial exercises and continues to walk on deformed knee the rate of degeneration increases and knee motion gets increasingly limited and painful and gradually the joint subluxates laterally. In rheumatoid arthritis, however, it is a total joint involvement from the beginning, at first as synovitis and later cartilage erosion and destruction by pannus formation leading to severe pain and deformity, often bilateral. Total knee replacement is indicated for persistent painful limitation of motion and deformity. It is unwise to replace a painless fused knee even with trivial deformity. Neuropathic joint is also a relative contraindication.

Till recently the procedure was

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undertaken only in a few centres in India with access to the most modern operation theatre facilities. Increasing incidence of osteoarthritis and increasing awareness in the population and demand from the patients has led us to evolve strategy so that such operations can also be undertaken successfully in public hospital set-up with much less expenditure.

REVIEW OF LITERATURE

The first report of replacement of both femoral and tibial articular surfaces appeared in 1950 as hinged prosthesis with intramedullary stems. But these simple hinged prostheses failed early because they were unable to account for the complex components of knee motion. Later, kinematic rotating hinge prosthesis had reasonably good success rate (Rand et al 1987). Polycentric knee was introduced in 1971 incorporating many of the concepts of Charnley's low friction arthroplasty of hip and keeping in mind the theory of femoral roll-back. Geomadic knee arthroplasty was introduced by Coventry in 1973. Posterior Cruciate Ligament (PCL) retaining and PCL sacrificing knees were both introduced in early seventies in the U.S. and total condylar knee arthroplasty had 94.6% clinical survival at 15 years (Ranawat 1993). Constrained Condylar Knee (CCK) was developed by Insall and others from PCL substituting design by enlarging the central post of tibial polyethylene and it was found to be specially useful for the elderly patients with valgoid knees (Easley et al 2000). Oxford knee was developed in 1976 as bicondylar knee arthroplasty with totally congruent tibial polyethylene inserts or menisci that were free to move on a polished metal tibial base plate. Low Contact Stress (LCS) design was developed incorporating many of the features of Oxford Knee (Buechell et al 1988) with ten year survival rate as high as 91.8%. There was no appreciable difference in result in cemented and uncemented systems (McCoskie 1998). Use of Continuous Passive Motion (CPM) machines also did not make significant difference in the final result (Maloney et al 1990).

MATERIAL AND METHODS

The study was conducted in the Department of Orthopaedics, GSVM Medical College, Kanpur, India, between Dec. 2002 to Jan. 04. Selection of patients was based on pain, deformity, and age. Examination and investigations were done to exclude recurrent or current knee sepsis, remote source of active infection, extensor mechanism discontinuity, genu recurvatum secondary to muscle weakness, and presence of painless well functioning knee arthrodesis. General condition of patient to withstand surgery was assessed. Complete working proforma was prepared for each patient. Apart from routine skiagrams, weight bearing skiagrams and strain films were also taken to understand the severity of soft tissue contractures, position of osteophytes, and patello-femoral changes. Preoperative knee scoring was done according to the revised knee scoring system of the knee society (1989). Implant was chosen according to financial status of the patient. However, so far only Indian implants have been used. Preoperative quadriceps drill and quadriceps strengthening exercises were started for both the knees. This went a long way to reduce flexion deformity of knee.

Preoperative antibiotics and prophylaxis for thromboembolic episodes

were started. Whole body bath was given to the patient a day before surgery but shaving of the part was done only half an hour before surgery. The operating room was thoroughly cleaned, carbolized and formalized a day before surgery and closed with ultra violet lights on. All the items required for surgery including slippers and shoes were kept in the theatre before formalization. Double sterlization was done for all the linnen and instruments. Clothes for changing were also sterilized. During surgery traffic of personnel was kept to the minimum. Double gowns or back covered gowns were used and all the precautions were taken during surgery to control sepsis including frequent lavage by saline using 50 ml syringe. Pneumatic tourniquet and power saw were used.

Post operatively a posterior plaster slab or a knee immobilizer was used. Cold compressions for 48 hours were used in half the cases to assess its efficacy. Quadriceps drill was encouraged. Suction drains were removed at 48 hours and gentle knee mobolization was also started. Weight bearing was started on the fourth or fifth day, stitches were removed between 12th to 14th day and the patient was sent home around the 20th day. Follow up was done at monthly interval initially and later every six months, and kneescoring was carried out every time.

OBSERVATIONS

Twelve operations of total knee arthroplasty in seven patients have been performed between Dec. 2002 to Jan. 2004. Seven cases were 60 years old or more (58.33%) and the rest were between 50 and 59 years. Four were males and eight females (66.67%). Eight operations were for primary osteoarthritis and the rest were for rheumatoid arthritis. Ten cases belonged to middle class (83.33%) and two belonged to low middle class family. Varus deformity was present in eight cases of osteoarthritis (66.67%) and in four cases of rheumatoid arthritis the knee was valgoid. Seven cases were operated fifteen years or more after onset of the disease while five were operated between 10-14 years after onset of the disease. Two patients were operated on the right knee and rest five were bilateral. Ten cases had severe restriction of movements of knee (range of motion 51 to 90 degree). Moderate continuous pain was reported in eight cases while four reported severe pain. Pain was the most important symptom for which operation was demanded and on an average there was a decrease of 86.67% in pain score as compared to normal persons.

Six months post-operatively eight cases had range of motion (ROM) between 100 to 110 degree. Seven cases gained 40 degree or more in their ROM post operatively. At six months no case had pain. While pain score increased up to fifty (i.e. normal) in four cases, the remaining case had an increase of 40 to 49 only. A comparison of pre-op and post-op knee score revealed that percentage increase in knee score at 15 days, 30 days and 6 months post-op was 56%, 63.3% and 65.6% respectively. Functional score dropped by 10% on an average at 15 days post-op as compared to pre-op level but it increased by 37.5% at 30 days and 47.08% at six months as compared to the pre-op level. Beneficial effect of cold compressions in the 48-hour post-operative phase on pain, haemostasis and range of motion has been shown in table number I. It was observed that cold compressions increased range of motion, decreased requirement of

painkillers and decreased blood loss. Eleven cases had no infection while one had superficial infection (8.33%) that responded well to antibiotics. One case had neurapraxia of common peroneal nerve, which fully recovered in six weeks. Figures 1 and 2 show the preoperative clinical and radiological photographs of one of the patient and figures 3 and 4 show the postoperative clinical and radiological photographs of the same patient.

Figure 1
Preoperative clinical photograph on right leg stance showing varus knee of osteoarthritis

Figure 2
Preoperative skiagram of the same knee in varus and valgus strain showing marked changes of osteoarthritis and ligament imbalance.

Figure 3
Postoperative skiagram of the same knee showing position of implant and quality of cementing.

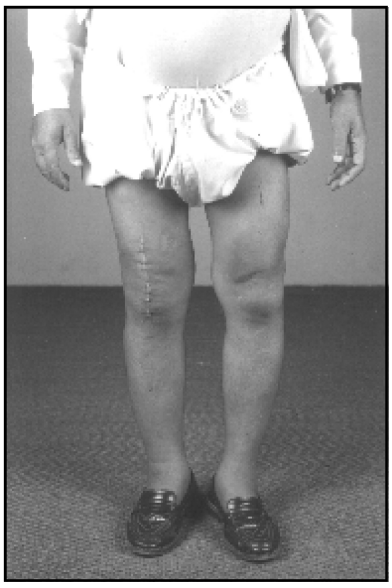

Figure 4
Postoperative clinical photograph of the same patient showing correction of deformity and full weight bearing.

DISCUSSION

There was definite improvement in range of motion, pain and function, patient sataisfaction and quality of life after arthroplasty as also agreed by Miner et al 2003. Recovery of lost motion and ability and speed of climbing stairs improved on an average by 53% during the first six months and walking speed by 45% (Lamb and Frost, 2003). Our observation was also nearly the same. It was found that eight of our cases (66.67%) that were not able to climb stairs preoperatively could do so after the operation. Benjamin and Johnson (2003) found that knee score and functional score improved upto six years and after that decreased with time. Basically it was due to the preogression of arthritis at other sites and cardiorespiratory problems. Women were found to have lower preoperative and postoperative knee scores as compared to men which was observed in the present study as well. In the present study the scores for men were 55 and 80.25 and for women 44 and 65. Fixed deformities can be very easily managed with arthroplasty (Tria, 2004) and our experience was not different. Our observation that cold compressions in the ealy post operative phase was helpful is supported by a similar observation by Levy and Marmar (1993).

The emphasis of the present study is not to comment upon survival rate of different prostheses or their long-term follow-up. Instead, early results of the present study confirm that such procedures could be performed in a public hospital set-up provided that sufficient care and precaution are observed. If the problems and possible pitfalls are identified in advance, good outcome of the surgery can be assured. One has to see that while choosing the patient, indications of operation is strictly adhered and it must be predominantly pain. Good technical know-how, functioning basic OT equipment and sterilization, disciplined team and good postoperative care and physiotherapy will almost always ensure good results. The team leader must take pains at every step in a public hospital set-up.

CONCLUSION

Total knee replacement can be successfully performed in a public hospital set-up if the team takes personal interest and care at every step of preoperative planning, operative technique and postoperative care and physiotherapy.

Table I
Effect of Cold Compression In the Early Posoperative Phase

Parameters	Study group	Control group
Range of motion		
7th day	54	41
15th day	84	70
1 month	99	80
Suction drain at 48 hours	562 ml.	800 ml.
Amount of bupivacaine given through epidural catheter in mg/kg in 48 hours	2.0 mg	3.0 mg

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CORRECTIVE SURGERY CAMPS IN RURAL SETUP
A COST EFFECTIVE APPROACH

D. Sharma*

ABSTRACT

According to the present statistics about 90% of the orthopedic Handicaps who form 10% of the national population live in backward & remote areas. Their sufferings are aggravated due to poverty ignorance & lack of rehabilitation facilities, which are concentrated only in big cities.

What is required at present is to provide free or highly subsided rehabilitation services by taking these facilities at the door steps of handicaps living in the backward & remote areas & creating awareness among them.

Within last three years, we together with N.G.O. (Manglam) and District Administration have arranged seven such corrective surgery cum rehabilitation camps at Dist. Hospital Seoni and Community Health center hospitals of the Seoni District which is a Tribal District. About 300 patients were operted in these camps by Local Orthopedic surgeons with the help of one of the Senior surgeon of nearby medical college. About 30-40 patients were operated in each camp with minimum Hospital stay of one or two days without any intra or post operative complications. The team of technicians and mobile workshop of manglam accompanied at each camp. Measurement for orthotics were taken so that we were able to provide orthotics at the first follow up after 3 weeks of surgery.

Systematic implementation of camp approach is found to be successful, acceptable and cost effective. We were able to provide highly subsidised or free of cost rehabilitation services at the Door steps of Handicaps living in the backward & remote areas.

INTRODUCTION

According to the Present Statistics (National Sample Survey Report) Nearly 90% of the Orthopaedically Handicaps Who themselves form 10% of the National Population live in Backward & Remote areas, their Sufferings are Aggravated by the facts that :

1. They can't afford any remedial steps due to povety.
2. They are ignorant about availabiity of such rehabilitational remedies.
3. These rehabilitational remedial facilities if at all available are concentrated only in big cities.

What is Required under present Circumstances is :

a. To help the Poor Handicaped by Providing free or highly subsidised rehabilitational services.
b. To educate the People about the preventive steps.

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c. To take the available rehabilitational facilities at the Door steps of the Handicapps living in the backward & remote areas.

MATERIAL & METHOD

Within last 3 years we together with Manglam a non government organisation & the District Administration have been arranging Corrective Surgery Cum Rehabilitation Camps at the District Hospital and Community Health centers at Tehsil Level in the Seoni District of Madhya Pradesh a Tribal District.

About 300 Patients having Deformities due to congenital malformation (C.T.E.V.), Polio, cerebral palsy, Leprosy Trauma & Post Burn contracture etc. were operated for correction of Deformities in six successive camps. By the team of Orthopedic Surgeons local & from Neighboring areas. Patients for the Surgery were selected in the previous Screening camps held at Primary Health Center Level by the visiting Orthopedic surgeon. All operations were performed under Dissociated Anesthesia (Ketamine) without any intra or post operative complications. Maximum patients were discharged within 48 hours. The team of technician which accompanied in Every Camp had the measurements of the limbs for fabrication of Orthotics simulataneously, first follow up was done after three weeks, Plasters & Stitches were removed and the Orthotic Appliances were fitted by the Rehablitation technicians after giving one or two days training and the patients were sent back. The patients preferred for Surgery were those who needed minimum of Surgical Procedure with maximum expected results. The procedures done were T.A. lengthening Both open & Percutaneous, Turco's procedure, fasciotomies, tenotomies, osteotomeis, Yount's procedure, few tendon transfers & Small Contrature release etc. The Socio Economic Problems of the Handicapped were also tried to be solved by various Government and Non Government agencies at the same time in the camps.

DISCUSSION

The concept of Rehabilitation as a Part of medical management is yet to spread to all parts of the country. At present only few Medical Colleges & certain Big Hospitals are having the Department of Rehabilitation. Consequently many of the Postgraduates in Orthopedic are not oriented toward Rehabilitation Program, this has Resulted in acute shortage of rehabilitation experts.

The object of rehabilitation program is to emprove the functioning at affected limb or part by providing training and Orthotic Appliances, so that it can have optimum use. Usually the deformities remain neglected or untreated so that these deformities requires correction prior to the fitting of appliances. The deformities are to be corrected before fitting of orthotics. Hence the Corrective surgery is an essential step of rehabilitation programme. The disabled people who live in remote and backward areas are deprived of such rehabilitation programme.

Objective of these rehabilitation camps is to provide the coverage of various rehabilitational programme to this deprived class of patients by bringing the rehabilitation experts to the Doorsteps of the disabled people.

Since last three years we had been arranging these corrective Surgery &

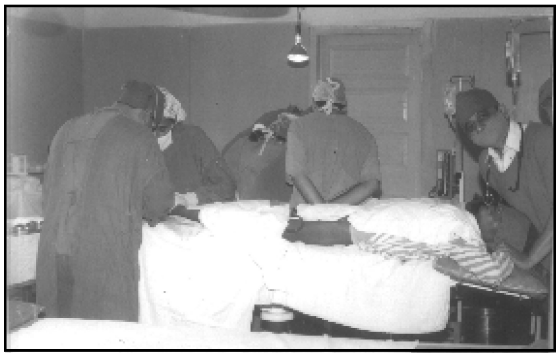

Figure 1
Basic OT setup at District Level

Figure 2
Team of surgeons during surgery

Figure 3
Pre-op photographs of the
patients waiting for surgery

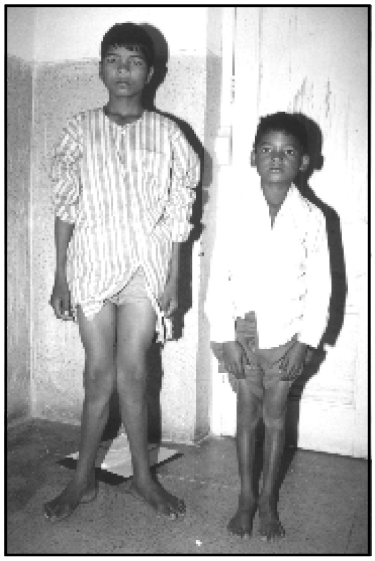

Figure 4 & 5
Pre-op photographs of the
patients showing deformities

rehabilitation camps regularly, bringing the various agencies working in this field at one platform. About 300 such corrective surgical procedures were performed in seven successive camps at District Hospital & Community health center level without any complications. In each camp about 30 to 40 patients were operated. Every camp was successful. It was a matter of great satisfaction that most of the rehabilitation experts surgeons adopted a human approach towards the problems, more so the response of the local people and District Administration was over whelming & whole hearted.

CONCLUSION

Systematic implementation of camp approach is cost effective & successful in bringing the success to the Handicaps living in the backward & remote areas, thus creating an awareness regarding the availability of these rehabilitational remedies, it will be a great service to the disabled and to the nation, if we can provide highly subsidised or free of cost rehabilitation services at the Doorsteps of Handicapps living in the backward & remote areas. The expenses to the patients are nominal since every camp was sponsored by (Manglam an N.G.O. and their rehabilitation team & Workshop).

In Conclusion it can be said with our experience that camp approach to the rehabilitation programme reduces the expenses manyfolds than that of the institutional approach by the patient. Larger number of populations can be covered by the rehabilitation programme, and the awareness regarding the rehabilitation is created, it will be a great service to the disabled & to the nation if we as rehabilitation experts approach to them instead of calling them to us.

SESSILE OSTEOCHONDROMA OF ISCHIOPUBIC RAMUS
A CASE REPORT

S. Keshkar*

INTRODUCTION

The usual site of osteochondroma is metaphysis of long bones (proximal tibia, distal femur etc.) Usual age of presentation is during the period of rapid skeletal growth i.e. 1st & 2nd decade of life. Usually ostochondromas are of stalked type. Here I report a case of osteochondroma of superior ischiopubic rami which is unusual in respect of site of origin, age of presentation and its variety.

CASE REPORT

A 35 years female, presented with a swelling on the right groin of about 5 years duration. She had slight pain on surrounding area of swelling and was unable to squat properly. There was no history of trauma. The swelling was about 5 x 2.5 cm. Diameter, looks unsightly, situated on right groin at medial to mid inguinal point. The skin over the swelling was shiny. There was no local rise of temperature. The swelling was hard in consistency & immobile, seems to be fixed to underlying bone. Swelling was directed downward & forward. There was no distal neurovascular deficit.

Roentgenogram of the pelvis with both hips revealed a bony outgrowth from superior ischiopubic ramus directing obliquely forward & downward (Fig 1). Other investigations (blood) were normal.

The tumor was excised surgically and was found to be attached with a broad base to the superior ischiopubic ramus.

Histopathologically the tumor contained mature bone & cartilaginous cells consistent with osteochondroma. Patient was followed up for one year, and shows no evidence of recurrence. (post op. x-ray, Fig-2)

DISCUSSION

Osteochondromas are the most common of benign bone tumors which are probably developmental malformation rather than true neoplasm and are thought to take origin from within periosteum as small cartilaginous nodule. This tumor consist of bony mass, produced by progressive endo-chondral ossification of a growing cartilaginous cap.Most lesions are found during the period of rapid skeletal growth & the tumor stops growing when skeletal maturity is reached. Osteochondromas are seen most often on the distal femur, the proximal tibia,and the proximal humerus but may occur on any bone preformed in cartilage. Most of these tumors are symptomless, few may cause pain due to irritation of surrounding structure, and

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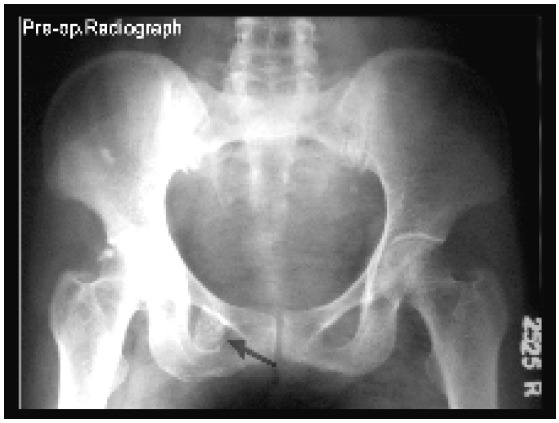

Figure 1
Pre-op radiograph showing bony outgrowth from the superior Ischio-pubic ramus

Figure 2
Post-op radiograph of the same patient following excision of the tumour

rarely one becomes fractured. Some huge osteochondroma may give rise to neuro-vascular compression due to pressure effect. The physical finding usually consist of a palpable mass.

Roentegenographically & grossly osteochondromas can be of two types:

1) Stalked type 2) Sessile or broad based. Stalked tumors are more common and any definite stalk is directed away from the epiphyseal plate adjacent to which it takes origin. The projecting part of the lesion has cortical & cancellous components, which are continuous with the corresponding parent bone. The lesion is covered with cartilaginous cap which usually cannot be seen on roentgenograms. This cap is only few mm. thick, but sometimes it is much thicker, which needs careful study to rule out secondary chondro-sarcoma. In the arrested lesions found in older people the cap may be thin or absent.

Treatment is indicated when the lesion is large enough to be unsightly or produces pressure symptoms. The treatment is excision (preferably Enbloc Excision) of the osteochondroma with a rim of normal bone surrounding its base or stalk. Recurrence is rare and is probably caused by failure to remove the entire cartilaginous cap.

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NOCARDIA ASTEROIDES OF THE FOOT
A CASE REPORT

S.K. Sharma* S. Sharma**

ABSTRACT

A rare case of Nocardia asteriodes in Foot reported and literature reviewed.

INTRODUCTION

Mycotic infection of bone is rare. Blastomycosis and coccidioidomycosis are the usual fungal infections that destroy the bone. Amphotericin B is effective in the treatment of these infections. 2-Hydroxystilbamibine is nearly effective but much less toxic. Ketoconazole, an antifungal imidazole compound is being used in 200 to 400 milligram per day dose for six months; and it also cures the mycotic disease.

Maduramycosis (Madura foot) is a common mycotic infection of foot in southern India which is characterized by progressive, local necrosis and abscess formation, intermittent discharge of a peculiar fluid through fistulous tracts and replacement by granulation and fibrous tissue. We are reporting infection of the foot by Nocardia Asteroides for its rarity.

CASE HISTORY

In 1985, Harisingh, a 30yrs old male village farmer came for the black pits on the sole of right foot of more that 3 yrs duration. He used to clean the pits by finger nails and thin wood sticks in past. It was neither associated with fever nor trauma but it was seasonal. When he was working in fields during rains, without shoes; it used to flare up and reduced significantly during summer., X-Ray suggested involvement of Vth metatarsal. The whole shaft of metatarsal was infested so ultimately is was excised. He was sent home.

He was given a course of Penicillin and Dapsone for one year. In 1988, after a symptom free period of 2 yrs, he again came with the same discharging sinuses on sole and on the dorsum of right foot. X-Ray suggested the involvement of the IV metatarsal. It was again excised & sent for biopsy & culture of black material.

Fungal culture revealed the growth of Nocardia asterioides. It is black coloured dusty material tightly filled within the whole shaft of metatarsal. It was granular just like the tea particles. The cortex was eroded at the metaphyseal areas. The metatarsal was fragile.

In 1990, he again presented with

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Figure 1
Right Foot showing three sinuses on the dorsum

Figure 2
Same foot showing multiple punched out lesions over the sole of foot.

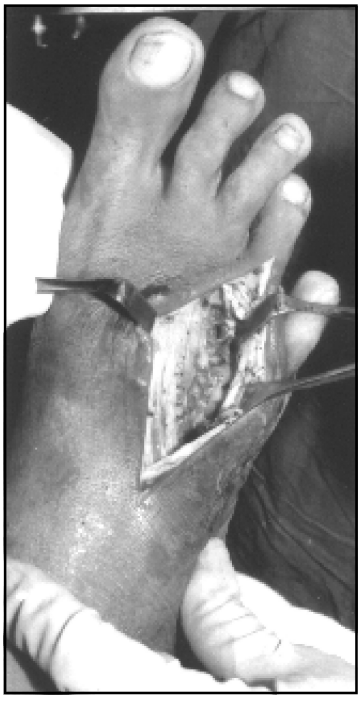

Figure 3
Intra operative photograph of the same foot showing the bed of IVth metatarsal

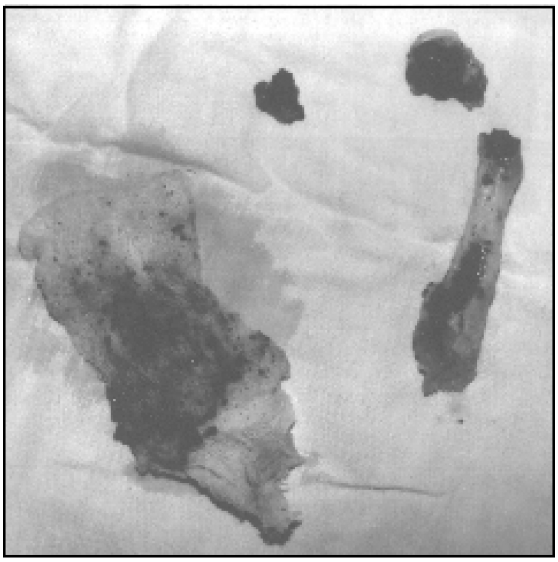

Figure 4
Excised metatarsal showing black granules in the whole metatarsal and over the gauze piece

multiple lesions in the same foot & requested for BK amputation which was performed and fitted with prostheses. He does not have any recurrence now in the last 15 years.

INVESTIGATIONS

X-ray of affected foot suggested thinning and ballooning of cortex of Vth metatarsal with osteolytic bone marrow. Other bones were osteoporotic. Subsequent X-ray of affected foot in 1988 suggested the involvement of IVth metatarsal with absence of Vth metatarsal. Blood picture was normal. Culture and sensitivity done showed the growth of fungus named Nocardia asteriodes with sensitivity towards Penicillin & Dapsone.

DISCUSSION

Madura foot is a common foot problem amongst the farms. Nocardia asterorides is a very uncommon fungus to affect the foot. The culture and sensitivity again revealed the susceptibility of fungus of Penicillin & Dapsone which only suppress the growth, but does not cure the disease as we have also seen the three relapses in this patient. The skin lesions were similar to the lesion of Madura foot with exception to liberating black granules. The pits were punched out in nature and the granules were usually scooped out leaving behind the fibrotic base in the skin. The colour of skin lesion was black with variable diameters ranging from 1mm to 6mm. The sinus over the dorsum of foot was single in number at the IVth MTP joint with two sinuses at the course of Vth metatarsal. Over the sole the punched out black pits were multiple in number.

Upon excision of metatarsal the fragile cortex liberated the black granules within out. These granules looked like black tea particles and easily separated from each other. The size of granules were 1mm to 1.5mm, light in weight and sticking to the gauze cloth. The base of metatarsal was red in colour due to presence of blood. Articular cartilage was intact. Surrounding tissue was normal in architecture.

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HAND SURGERY FELLOWSHIP - A REPORT

R.B. Karandikar*

In the month of January this year I got the opportunity to attend a Hand Surgery Course at Pune followed by a Fellowship in Advanced Hand Sugery at Pune from 24th to 28th January 2004. In our Dept. of Orthopaedics N.S.C.B. M.C.H. Jabalpur I was guided and motived by Professor & H.O.D. Dr. H.K.T. Raza sir and Dr. A.C.Agrawal.

The Fellowship in Hand Surgery was fully guided by Dr. Pankaj Jindal (M.S. Ortho) a loading Hand Surgeon of Pune.

I attended the Hand Sugery Course at Poona Hospital.Pune on 24th & 25th Jan.. It was really an academic feast. It was precided by Outstanding Stalwart Prof. Dr. B.B. Joshi Sir.

The course and all lectures were very properly arranged by Dr. Pankaj Jindal. Some outstanding lectures were given by Dr. Hemant Patankar, a Hand Surgeon from Mumbai and Dr. P. Kotwal : Professor A.I.I.M.S. Delhi.

The whole material provided here was updated nicely for the next 3 days. It was a direct training under Dr. Pankaj Jindal.

I and Dr. R. Mosta from Vidisha were there for fellowship. I assisted in various operative procedures done by Dr. Jindal at Jahangir Hospital & Ratna Memorial Hospital, Pune.

I learned basic tendon transfer procedures for wrist drop, syndactyly release, contracture release etc. An overview of basic understanding of all flap surgeries was made clear.

Dorsal flaps, palmar flaps & cross finger flap surgery were done; each surgery concepts were clearly made.

This course was a very nice beginning for postgraduates to understand basic Hand concepts. This was made possible under M.P. Chapter of I.O.A. and waivery was given for registration at the course.

More and more of P.G. students must attend such course every year to inculcate more interest in subspecialities of orthopaedics.

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