

Evaluation of role of antibiotic cement impregnated intramedullary nail in infected long bone fractures

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Sir,

I read with interest the article by Mantri D et al.[1] titled as "Evaluation of role of antibiotic cement impregnated intramedullary nail in infected long bone fractures". Infection has always been a dreaded complication in orthopaedic surgeries. Role of antibiotic cement impregnated nails promises to be a good treatment option for infection of long bones. We congratulate the authors for the wonderful effort that they have put in for this study.

However there are a few concerns that I would like to share.

The Author states that Ilizarov fixator and limb reconstruction system (LRS) do not address infection control. The primary indication of ilizarov external fixator is infected non-union of long bones. Combining with debridement and thorough irrigation of the wound it has been a very effective tool in controlling infection.[2] In cases with low grade infection it can be an effective modality even when used without debridement . Same principle applies to LRS.[3] These two (Ilizarov & LRS) are the only treatment options in infected non-union when the bone defect is more than 2 cm.

1. Impact of Antibiotic coated nail in infection control is not clear.

The author has combined the use of debridement, reaming of the medullary cavity and irrigation with antibiotic solution along with the use of antibiotic impregnated nails. It may be possible that primary procedures were responsible for infection control and nail had little contribution to that. [4] A RCT between uncoated and coated nails along with these primary procedures might have been more useful in answering the question.

2. Wound was again irrigated thoroughly and closure performed if possible otherwise skin grafting done on same sitting or later depending on wound size.

The author says that the average time for infection control was 3.7 weeks. Active infection is considered as contraindication for skin grafting. [5] In how many cases did the author performed skin grafting in the same sitting and did they encounter any complication in that.

3. The authors have used K nails with antibiotic cement placed in the nail slot sparing the eyes.

Using a smaller size interlocking nail / K nail and coating it with antibiotic cement [6] might have been a better option as it would

have increased the surface area of contact with the bone and better delivery of antibiotic in the medullary cavity.

Reference

1. Mantri D, Soni SK, Sonkar DK. Evaluation of role of antibiotic cement impregnated intramedullary nail in infected long bone fractures. Orthopaedic Journal of M. P. Chapter 2015;21(2):36-9
2. Marsh DR, Shah S, Elliott J, Kurdy N. The Ilizarov method in nonunion, malunion and infection of fractures. J Bone Joint Surg [Br] 1997;79-B:273-9.

Author's Reply

Sir

Thanks for showing keen interest in our study [1] and raising the pertinent queries [2]. I have gone through all points of concern and my submission to them is as follows

1. We have stated that ilizarov fixator and LRS system don't address infection per se because they don't have a local antibiotic delivery system. With use of these modalities infection is controlled by increased local vascular supply which encounters infection at the fracture site[3], while ACIINS has local antibiotic delivery system which primarily helps to control infection

2. Debridement and reaming alone are well known tools to control and eradicate infection, but the success rate was not that good that's why need for local antibiotic delivery system to combat bone infections evolved and that is well proven in the literature in the form of antibiotic cement beads and spacers

3. Wound closure was done depending on wound size and wound condition. Out of 5 STSG done 2 were done at same sitting and 3 done after 1 week

3. Hashmi MA, Ali A, Saleh M. Management of nonunion with monolateral external fixation. Injury. 2001; 32: 30–4
4. Cross WW, Swiontkowski MF. Treatment principles in the management of open fractures. Indian J Ortho .2008;42: 377–386.
5. Unal S, Ersoz G, Demirkan F, et al. Analysis of skin-graft loss due to infection: infection-related graft loss. Ann Plast Surg. 2005;55(1):102–106.
6. Shyam AK, Sancheti PK, Patel SK, Rocha S, Pradhan C, Patil A. Use of antibiotic cement impregnated intramedullary nail in treatment of infected non union of long bone .Indian J Orthop 2009;43:396-402

4. There are various ways the antibiotic cement coated nail can be prepared. We have used K Nail and we have given our explanation in point no 3 and 4 in original article under heading why K Nail used.

Reference

1. Mantri D, Soni SK, Sonkar DK. Evaluation of role of antibiotic cement impregnated intramedullary nail in infected long bone fractures. Orthopaedic Journal of M. P. Chapter 2015;21(2):36-9 .
2. Sharma P, Verma R, Gohiya A, Gaur S. Evaluation of role of antibiotic cement impregnated intramedullary nail in infected long bone fractures - Letter to editor . OrthopJMPC 2016;22(1): 44.
3. Marsh DR, Shah S, Elliott J, Kurdy N. The Ilizarov method in nonunion, malunion and infection of fractures. J Bone Joint Surg [Br] 1997;79-B:273-9.