

Report For A Particular Form Of An Armored Nonunion Due To Tiba Nailing.

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Abstract

Armed non-union is a rare complication due to cortical intrusion of an intramedullary nail. The management of this type of complication is difficult because combining both a problem of consolidation and axial deformation by retraction of the soft tissue parts.

Our report is about an observation of an armed non-union by cortical intrusion of distal end of the nail.

INTRODUCTION

Pseudoarthrosis or non-union is one of the main complications of leg fractures [1]. The management is a difficult practice, especially when caused by surgical implant (armed non-union). Intramedullary nailing has become the most commonly technique used. [2]. However, mechanical complications as nail breaking due to the break of locking screws occur in the event of early support [3].

We are reporting a case of an armed non-union by nail intrusion due to breakdown of distal locking screws.

CASE REPORT

We are reporting about a 56-year-old male patient with a particular form of an armed non-union of left leg. The patient was involved in a road traffic accident (RTA).

The patient was admitted in our casualty ward with close, left lower sheath tib-fib fracture with no vascular and nerve compromised. Four hours from the accident and after primary care, the patient was taken to the operating room and under spinal anaesthesia, we performed an intramedullary nailing with locking screws (TARGON NAIL). The patient was discharged for home without any early complications after 4 weeks. With early ambulation or weight bearing, the patient felt a cracking bruit in his leg and deformation occurred. He consulted traditional practioners without good results. Four years off, he found out that the deformity increased his difficult to walk normally. This is

why he then he decided to come back to us again.

At the admission, he was hemodynamically stable with left lower leg impotence, limping and 4 cm shortness of the leg. Axial deformation at 50-degree valgus associated 25 degree ante-recurvature without vascular and nerve injuries of the distal leg were seen (figure: 1). Standard XRay face and lateral views including above and below joints showed the nail intrusion throughout the tibia to the cortical and broken distal locking screws while the proximal one looked intact resulting in valgus axial deformation of the leg (figure: 2). Lab tests such as CBC, CPR, FBG, BLOOD TYPE/RH, HIV Test, kidney and liver functions were normal. Nail and screws removal were thought to cure the non-union and a decision made for plate and screws.

Under spinal anaesthesia on supine position on an ordinary table we performed the procedure in three steps:

- First step: nail and screws removal and debridement of inter-fragment fibrosis,
- The second, consisted of "Z" Achilles's tendon elongation/ plasty to correct unreductible equinism,
- The third step incuded tibia straightening and T-plate placement and pinning with Steimann transplant to keep the equinism corrected as shown in the figure (Figure: 3a/3b).

Post-operative care was done with IV ATBs such as Ceftriaxone 1G qid for 3 days, low molecular weight heparin (Lovenox 0,4 UI) s/c for 10 days and pain management with tramadol 100 gm.

The outcome was good, no sepsis, quick wound healing, X-ray follow upon both views, face and lateral showed a good reduction except a residual valgus of 15 degree and about 1 cm leg shortness. Weight bearing delayed accordingly to the degree of callus formation and total weight bearing was ordered 3 months later.

The patient was reviewed after 5 years and reassessed based on ASAMI (Association for the Study and the Application of the Method Ilizarov), table 1.

Table 1

ASAMI criteria assessment.

Tableau 1
Critères d'évaluation de l'Association for the Study and the Application of the Method of Ilizarov (ASAMI).

ASAMI	Description	Score
<i>Consolidation</i>		
Excellent	Consolidation, pas d'infection, cal vicieux < 7°, inégalité de longueur < 2,5 cm	50
Bon	Consolidation + (Pas d'infection ou cal vicieux < 7° ou inégalité de longueur < 2,5 cm)	7
Passable	Consolidation + un critère suivant : pas d'infection, cal vicieux < 7°, inégalité < 2,5 cm	2
Mauvais	Pseudarthrose/Fracture itérative/Consolidation + infection + cal vicieux > 7° + inégalité < 2,5 CM	1
<i>Fonction</i>		
Excellent	Actif, raideur (perte de < 15° genou tendu/ < 15° cheville fléchie), douleur insignifiante	45
Bon	Actif, + 1 ou 2 critère suivant : raideur, douleur significative	10
Passable	Actif, + tous les critères suivants : raideur, douleur significative	3
Mauvais	Inactif (incapacité d'assurer les activités quotidiennes)	2
Échec	Amputation	0

These criteria are based on the healing and functional joints. Our results were judged as excellent in healing in time, joints functioning well as showed by the patient standing on one foot (figure:4).

Figure 1

Showing a 50° valgus deformation associated with a 25° antecurvatum without vasculo-nervous disorder



Figure 2

Radiograph of the leg showing the pseudarthrosis of the distal quarter of the two leg bones with breaking of the nail after breaking the distal locking screw.



Figure 3a

Showing the installation of the T-plate après removal of the nail and correction of the axial deformation.

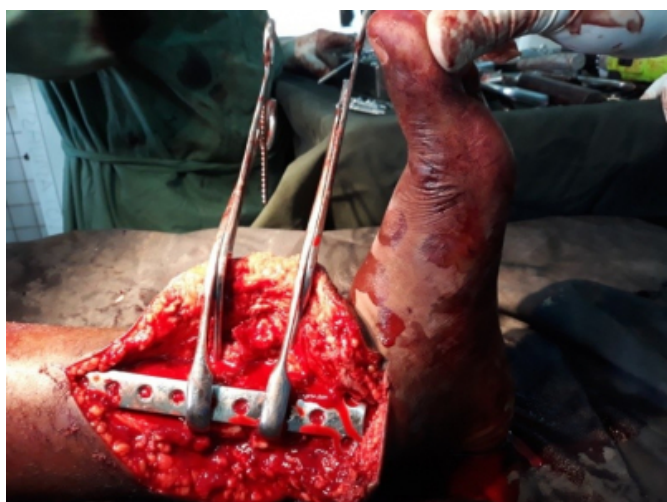


Figure 3b

Control radiograph showing a residual valgus of 15°.



Figure 4

Showing functional results in a monopodal standing position.



DISCUSSION

The treatment of non-union or pseudoarthrosis of long bones is most codified including decortication, implant repairing, loss of substance replacement with induced membranes and bone graft nowadays [4-5]. On the other hand, the

management of armed non-union of leg with significant axila deformation in antecurvatum and valgus remains or deserves a difficult surgery. Difficulties related to the correction of axial deformation in state of retracted soft tissues particularly sural triceps muscle as seen in our patient. Three steps were done in our patient, the first was the nail removal with locking screws, the second done with "Z" plasty to elongate Achilles' tendon and finally excision of fibrosis between fragments, reaming the medullary canal, antecurvatum correction and "T" plate with nine screws including two sponge screws, overall completion with Steimann nail to maintain the valgus correction as the last step.

The outcome was good, first intention wound healing, Steimann nail removal at the third week, around 15-degree valgus as axial deformation tolerated by the patient, and no additional surgery needed. The leg shortness about 1 cm corrected by stepping on the heel. 5 years back, the patient was completely autonomous or free of motion with unlimited walking distance. We have not yet noticed this type of mechanic complication with such as degree of axial deformation due to broken nail following the breakdown of distal locking screws in the literature. However, other forms of mechanical complications (breakdown and disassembly of surgical implants or equipment) have been reported by some authors [6,7,8]. This mechanical complication found in our patient is explained by early motion and weight bearing on a locked nail before the callus formation. Delaying to consult our department was due to the patient by going first to the traditional medicine.

The practice of traditional treatment in case of fractures is

the first step in our country and patients usually to hospital when complications happened, hence difficult management.

CONCLUSION

Armed non-union is a rare mechanical complication, due to cortical rupture by the implant is still very exceptional in literature. The management of this type of complication requires a well-managed surgical strategy that allows good results obtained after a period of time/ or a good moment.

References

- 1- Grutter R, Cordey J, Buhler M, Johnner R, Regazzoni P. The epidemiology of diaphyseal fractures of the tibia. *Injury* 2000;31:C64-7.
- 2- Benmansour MB, Gottin M, Rouvillain JL, Laros AG, Dib C, Dintimille H et al. elastic nailing of the tibia with closed focus by Marchett-Vincenzi nail. *Rev Chir Ortho*, 1999, 85, 267-276.
- 3- Lamah L., Diakité S.K., Kikpé C.V., Bah M.L., Diallo M.C.H., Baldé M.Y., et al. Mechanical complications of osteosynthesis. Frequency and risk factors at Orthopaedic Traumatology Department of Donka in Guinea. *TunOrthop*. 2011,4,(1) :52-55.
- 4-Biglari B, Yildirim TM, Swing T, Bruckner T, Danner W, Moghaddam A. Failed treatment of long bone non-unions with low intensity pulsed ultrasound. *ArchOrthop Trauma Surg* 2016;136:1121-34.
- 5-Van CH, Hauzeur JP, Gillet P. News in the treatment of pseudarthroses aseptics. *Rev Med Liège* 2007;62:344-51.
- 6- Essadki B., Lamine A., Moujtahid M., Nechad M., Dkhissi M., Zryouil B. Aseptic mechanical complications of osteosynthesis of fractures of the femoral diaphysis treated with a screwed plate. *ActaOrthopBelg* 2000; 66:61-8.
- 7- Moyikoua A., Bouity-Buang J.C., Pena-Pitra B. Mechanical complications post operative osteosynthesis of the lower limb osteosynthesis. Analysis of 22 case. *MédAf Noire* 1993; 40:509-15.
- 8-Gogoua D.R., Touré S., Anoumou M., Kouamé M., Koné B., Varango G.G. Mechanical complications of osteosynthesis of limb fractures: an epidemiological analysis of 26 observations. *Mali Medical* 2006;21:5-9.

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