Keywords: Fractures; Osteosynthesis; Mechanical failure; Physiotherapy

Introduction

Osteosynthesis follow strict principles: proper indication and surgical technique. The implant should be well adapted to the bone and to the fracture in order to insure its mechanical role [1-3]. Rigid fixation allows early joint mobilisation in some cases [4]. Relative minimal mobility is needed in other cases. After osteosynthesis, bone consolidation depends on many factors among which the surgeon, the implant, and the patient compliance. The purpose of this study was to determine the importance of implant failure in our setting and the related factors (Figure 1).

Methodology

It was an analytic and descriptive hospital based study done from September 2009 to September 2012 in the orthopaedics and traumatology service of Laquintinie hospital of Douala, in Cameroun.

Were included, patients followed or referred to our service, that had have and osteosynthesis and whose implant was showing a failure on the control radiography. We studied the frequency, the patients’ age, sex, initial pathology, bone involved, fracture site, surgical technique, implant type, delay between surgery and the failure, type of failure and its mechanism.

Results

We had 58 cases (after 330 osteosynthesis that is 17.58%): 45 men and 13 women. Sex ratio: 3.46. Mean age 25 years. The initial condition was: a close fracture in 29 (50%) of cases, an open fracture in 21 (36.21%)% and a pseudarthrosis in 4 (6.90%), an osteomyelitis in 3 (5.17%), and a limb deformation in 1 (1.72%). Plating was the most involved procedure: 36 (62.07%) of failed implants were stainless steel plates; and 21 (56.33%) of these were broken. In 13 (22.41%) of cases, there was a fall preceding implant failure. In 8 cases (14%), the physiotherapy was inappropriately done by a traditional healer.

Conclusion: Implant failure is a real problem in our environment. Factors include- surgeon failure, implant failure and patient related failure. Good indications, surgical technique and appropriate physiotherapy can reduce implant failure in our milieu. We did not carry out mechanical studies on failed implants.

Abstract

Introduction: Osteosynthesis has well defined principles. When the surgeon does not follow these principles, implant failure is likely to happen. The purpose of this study was to study this issue in our service and to search for underlining factors.

Methodology: It was a descriptive study done from September 2009 to September 2012, in the orthopaedics and traumatology service of the Laquintinie hospital of Douala in Cameroon. Were enrolled, all patients operated or referred in the service and presenting an implant failure (folding, breakage, migration, disassembly bone fixation loosening).

Results: We had 58 cases (after 330 Osteosynthesis that is 17.58%), 45 men and 13 women. Sex ratio: 3.46. Mean age 25 years. The initial condition was: a close fracture in 29 (50%) of cases, an open fracture in 21 (36.21)% and a pseudarthrosis in 4 (6.90%), an osteomyelitis in 3 (5.17%), and a limb deformation in 1 (1.72%). Plating was the most involved procedure: 36 (62.07%) of failed implants were stainless steel plates; and 21 (56.33%) of these were broken. In 13 (22.41%) of cases, there was a fall preceding implant failure. In 8 cases (14%), the physiotherapy was inappropriately done by a traditional healer.

Conclusion: Implant failure is a real problem in our environment. Factors include- surgeon failure, implant failure and patient related failure. Good indications, surgical technique and appropriate physiotherapy can reduce implant failure in our milieu. We did not carry out mechanical studies on failed implants.

Copyright: © 2016 Mohamadou AS, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

*Corresponding author: Atemkeng Tsatedem Faustin, Orthopaedics and Traumatology Surgeons in Laquintinie Hospital of Douala, Orthopaedics and Traumatology Service, University of Dschang, Cameroon. Tel: (237) 243691512; E-mail: atemfaust@yahoo.fr

Received March 25, 2016; Accepted July 28, 2016; Published July 30, 2016

Citation: Mohamadou AS, Faustin AT, Gustave TJ, Richard NP, Alphonse B (2016) In-Appropriate Physiotherapy: An Unusual Factor of Implant Failure in Douala. J Trauma Treat 5: 323. doi:10.4172/2167-1222.1000323
and 13 women. Sex ratio: 3.46. Mean age 25 years. Concerning the place of previous surgery, 33 (after 330 osteosynthesis that is 10%), patients were initially operated in our service whereas 28 were referred from surrounding hospitals.

The initial condition (Table 1) was a close fracture in 29 (50%) cases, an open fracture in 21 (36%), a pseudarthrosis in 4 (7%), an osteomyelitis in 3 (5%), and a limb deformation in 1 (2%).

The most involved bones (Table 2) were: the femur in 32 cases (55.17%), the tibia with 14 (24.13%) and the humerus in 8 cases (13.79%). The fracture site (Table 3) was diaphyseal in 31 cases (54.45%), metaphyseal in 26 cases (44.83%) and epiphyseal in one case (1.72%).

Plating was the most involved procedure (Table 4): 36 (62.07%) of failed implants were stainless steel plates; 21 (58.33%) of these were broken. Ten of these 26 (27.78%) were condylar blade plate for distal femur. Nails accounted for 10 (17.24%) with 8 fractures and 2 folding. We had 9 (16%) screws failures: 7 disassembly and 2 breakages; and 3 kirchner wire breakages.

Implant fracture was the most encountered with 34 cases (58.62%) versus 14 (24.14%) disassembly and 10 (17.24%) foldings.

The weight bearing was authorised (Table 5) less than 3 months after surgery in 48 (82.75%). In 13 (22%) of cases there was a fall preceding implant failure. The vigorous physiotherapy manipulations by traditional healers accounted for 8 cases (14%).

We were able to re operate 40 (68.97%) of these patients: implant removal, decortication, grafting and/or re osteosynthesis. The evolution was long, and complicated by superficial infection (that healed after local measures) and joint stiffness in 5 cases (12.5%).

**Discussion**

Implant failures normally range from 0.35%-0.44% of osteosynthesis [5]. In our study, this rate was very high (17.58%). Even when we consider only patients initially operated in our service, the rate is 10% which is still very high. This because of poor control of known factors: surgeon failure, implant failure, patient and physiotherapy related failures [1-3]. This rate is not far from the 10%-16% found by Moyikoua et al., working almost in similar conditions [6].

**Conclusion**

Implant failure is a real problem in our environment. We found inappropriate physiotherapy as an unusual factor of implant failure. Surgeons working in the same conditions should be aware of this malpractice. Good planning, indications, surgical technique and physiotherapy can reduce implant failure in our milieu. We did not carry out mechanical studies on failed implants.

**References**

1. Akhtar A, Shami A, Habib Abbasi S, Zimri F, Mateen MA (2009) Broken orthopaedic implant: an experience at PIMS. Ann Pak Inst Med Sci 5: 136-140.
2. Sharma CAK, Ashok Kumar MG, Lt Joshi CGR, John JT (2006) Retrospective study of implant failure in orthopaedic surgery. MJAFI 62: 70-72.
3. Sivakumar M, Kamachi Mudali U, Rajeswari S (1994) Investigation of failure in stainless steel orthopaedic implant devices: fatigue failure due to improper fixation of compression bone plate. J Mat Sci 13: 142-145.
4. Ruedi TP, Richard E (2007) AO Principles of fracture management, Volume 1 Thieme p: 947.
5. Pichler W, Mazzurana P, Clement H, Grechenig S, Mauschitz R (2008) Frequency of instrument breakage during orthopaedic procedures and its effects on patients. J Bone Surg Am 90: 2652-2654.
6. Moyikoua A, Boutly-Buang JC, Pena-Pitra B (1993) Complications mécaniques post-opératoires des ostéosynthèses du membre inférieur: analyse de 22 cas. Médecine d’afrique noire 40: 509-515.