

In-Appropriate Physiotherapy: An Unusual Factor of Implant Failure in Douala

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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%), 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.

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



- Pseudarthrosis, disassembly and breakage of a narrow humeral plate.
- Fracture of an intramedullary femoral Kuntcher nail.
- Breakage of an AO 95° plate for distal femur.
- Folding of a large femoral plate that left the third fragment free.
- Disassembly of two improper plates for a proximal leg fracture.
- Fatigue fracture of an AO 95° plate for distal femur.

Figure 1: Implants failures.

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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

Diagnosis	Number of Cases	Percentage
Close fracture	29	50%
Open fracture	21	36.21%
Pseudarthrosis	4	6.90%
Infected fracture	3	5.17%
Limb deformation correction	1	1.72%
Total	58	100%

Table 1: Initial conditions of patients.

Bone	Number of cases	Percentage
Clavicule	1	1.72%
Humerus	8	13.79%
Radius	2	3.45 %
Ulna	0	0%
Femur	32	55.17%
Tibia	14	24.14%
Malléole externe	0	0%
Malléole interne	1	1.72%

Table 2: Bones fractured.

Localisation	Number of cases	Percentage
Epiphysis	1	1.72%
Metaphysis	26	44.83%
Diaphysis	31	53.45%
Total	58	100%

Table 3: Fracture localisation.

Implants	Failure Number	Percentage	Failures types		
			Fracture	Disassembly	Folding
Plates	36	62.07%	21	7	8
Nails	10	17.24%	8	0	2
Kirchner wires	3	5.17%	3	0	0
Screws	9	16%	2	7	0
Total	58	100%	34	14	10

Table 4: Implants and failures types.

Weight Bearing Delay	Number of Cases	Percentage
<1 months	19	32.76%
1-2 months	29	50.00%
2-3 months	6	10.34%
>3 months	4	7%
Total	58	100%

Table 5: Total weight bearing delay.

(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 36 (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.

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