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Research Article

INTRAMEDULLARY INTERLOCKING NAIL: A TREATMENT OPTION AFTER IMPLANT FAILUREOF DIAPHYSEAL FEMORAL FRACTURES

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Abstract:		
Objective: To assess the functional outcome in	n patients having diaphyseal fracti	ure of femur with implant failure after
treatment of intramedullary interlocking nails	I.	
Methodology: Present cross-sectional study	had conducted in the department	t of orthopaedic Surgery of LUMHS.
Study duration was 2 years from August 2014	to July 2016. Patients with presen	ntation of implant failure in treatment
of closed femoral diaphyseal fractures were se	elected. All the failure implants we	re removed, and patients were treated
with imported intramedullary interlocking nat	ils. All the data was recorded in th	ie proforma.
Results: Total 27 patients were included afte	er implant failure of diaphyseal fr	cacture of femur; their mean age was

 41.2 ± 9.23 years. Males were found in majority 22(84.6%), while female were only 05(15.4%). According to the functional outcome, 09(33.3%) showed excellent outcome, 13(48.1%) showed good outcome and 05(18.5%) showed poor outcome.

Conclusion: It was concluded that poor quality of implant and poor post-operative care were responsible implant failure and after failure replacement by imported intramedullary interlocking nails is the best option for management. **Key Words:** Femoral fracture, Implant failure, intramedullary interlocking nails

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INTRODUCTION:

The femur is the strongest, largest and heaviest long bone in the body. Femoral shaft fractures are the most common injuries which the orthopaedic surgeons come across, which are the result of severe trauma in young age.¹ Diaphyseal femur fractures are commonly encountered in association with other high-energy injuries. These injuries can lead to life-threatening sequelae. Prompt intervention and thoughtful management lead to the best patient outcomes.² There are an estimated 9 to 22 femur fractures per 1000 people worldwide that present every year.² Internal fixation is often required to achieve early ambulation which aids timely return to normal function.³ However, an internal fixation device may fail to hold a reduced fracture until union, giving rise to non-union or delayed union. Implant failures arise mainly from loosening or breakage of the internal fixation device. Because bones are more flexible than metal plates, screwing a metallic plate to bone stiffens.³ Many procedures are presently accessible for the treatment of it, and orthopedic specialist must know about disadvantages, limitations and advantages of each to choose the best possible treatment for every patient.⁴ Mechanical failure of implants fall into 3 categories: Plastic, Brittle and Fatigue failure. Plastic failure is one in which the device failed to maintain its original shape resulting in a clinical failure. Brittle failure, an unusual type of implant failure, is caused by defect in design or metallurgy.⁵ Handling an implant failure situation, with all its associated problems, can be a horrifying experience for the patient and the surgeon alike.⁶ Early descriptions of intramedullary nailing for the treatment of delayed union and nonunion of fractures rarely distinguished between patients undergoing nail exchange and those undergoing nail stabilization following failure of another treatment method.⁷⁻⁹ This study has been conducted to determine the functional outcome in patients having diaphyseal fracture of femur with implant failure after treatment of intramedullary interlocking nails.

MATERIAL AND METHODS SETTING:

This study was conducted in the department of Orthopaedic Surgery and Traumatology of LUMHS Jamshoro and Hyderabad. The duration of study was two years i.e. from August 2013 to July 2015. All the cases age >14 years of the age and with implant failure after treatment of close femoral diaphyseal fractures were selected. All the cases with diabetes mellitus and other severe comorbidities were excluded from the study. Subsequently these cases were admitted in DOST unit for the management. Patients were underwent imported intramedullary interlocking nails. All the surgeries were done by the senior surgeons having experience more than 10 years. Patients were discharged on stable condition.Functional Outcome of the Present Study was evaluated after 6 Months of Surgery by Using the Criteria as showed in table.1. All the data was entered in proforma. All the data was analyzed through SPSS program version 20.

Table;1: Functional outcome.¹⁰

GRADE	CRITERIA	
	< 1cm shortening	
EXCELLENT	>100deg of knee flexion	
	no infection	
	anatomical alignment of medullary canal	
	absence of pain	
	unrestricted activity	
	Radiological callus formation <12 weeks	
	<90deg of flexion and >45deg of knee flexion	
GOOD	superficial infection	
	<3deg of angulatory deformity of medullary canal	
	occasional dull aching pain	
	radiological callus formation 12-24 weeks	
	Knee joint stiffness ROM <45 deg	
POOR	deep infection	
	debilitating pain	
	radiological callus formation >30 weeks	
Table 1: "criteria for evaluation of outcome"		

RESULTS:

Total 27 patients were included after implant failure of diaphyseal fracture of femur, their mean age was 41.2 ± 9.23 years. Males were found in majority 22(84.6%), while female were only 05(15.4%). **Table:** No.1.

According to the functional outcome, 09(33.3%) showed excellent outcome, 13(48.1%) showed good outcome and 05(18.5%) showed poor outcome. **Table No. 2**

Table:2.	Patients	distribution	according to	age and
		gender; n=	27	

Variables	Statistics
Age	
(Mean+SD)	41.2 <u>+</u> 9.23 years
Gender	
Male	22(84.6%)
Female	05(15.4%)

Table:3. I	Functional	outcome	n=27
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Responsible factors of implant failure	Frequency (%)
Excellent	09(33.3%)
Good	13(48.1%)
Poor	05(18.5%)
Total	27(23.3%)

DISCUSSION:

intramedullary interlocking nail offers the best biomechanical environment for fracture healing through reaming of the medullary canal and the stability in the form of near rigid fixation and prevention of rotational torque, especially in implant failure scenario.^{1,2,8}

This study has been conducted to assess efficacy of intramedullary interlocking nails in the treatment of implant failure after treatment of intramedullary interlocking nails. Exchange nailing remains the treatment of choice for aseptic, non-comminuted nonunion of the femoral diaphysis following primary intramedullary nailing.¹³ In this study intramedullary interlocking nails showed best outcome. In other studies also reported that intramedullary interlocking nail offers the best biomechanical environment for fracture healing through reaming of the medullary canal and the stability in the form of near rigid fixation and prevention of rotational torque, especially in implant failure scenario.¹⁰⁻¹² In this study according to the

functional outcome, 09(33.3%) showed excellent outcome, 13(48.1%) showed good outcome and 05(18.5%) showed poor outcome. Similarly, Rapaka Radhakrishna et al⁶ reported that excellent findings were in 33.33%., Good among 55.55%. and Poor outcome was found among 11.11 % patients. In another study reported that exchange nailing is an excellent choice for aseptic nonunions of noncomminuted diaphyseal femoral fractures, with union rates reported to range from 72% to 100%. On the basis of the available literature, exchange nailing cannot be recommended for distal femoral nonunions at this time. Exchange nailing is an excellent choice for aseptic nonunions of noncomminuted diaphyseal tibial fractures, with union rates reported to range from 76% to 96%.⁷ In this study total 27 patients were included after implant failure of diaphyseal fracture of femur, their mean age was 41.2+9.23 years. Males were found in majority 22(84.6%), while female were only 05(15.4%). Similarly, Lakhey Set al⁶ reported that all implant failure cases were young adults (14-40 years). 15 were males and 2 were females. 16 cases (94%) had sustained their initial injury in road-traffic

CONCLUSIONS:

It was concluded that poor quality of implant and poor post-operative care were responsible implant failure and after failure replacement by imported intramedullary interlocking nails is the best option for management.

REFERENCES:

- Nitin Kimmatkar, Jaya T. Hemnani, T. J. Hemnani, S. K. Jain. "Diaphyseal Femoral Intramedullary Nailing: Closed or Open Intervention?". International Journal of Scientifi c Study. 2014;1(5):15-18
- 2. Medda S, Halvorson J. Diaphyseal Femur Fracture. InStatPearls [Internet] 2019 Jan 20. StatPearls Publishing.
- Ogbemudia AO, Umebese PF. Implant failure in osteosynthesis of fractures of long bones. CMS UNIBEN JMBR 2006; 5(2): 75-78
- 4. Memon A, Memon FA, Kerio NA, Memon MY. To Assess the Causes of Implant Failure in Treatment of Closed Femoral Diaphyseal Fractures. Med Forum 2017;28(2):90-93.
- **5.** Rapaka Radhakrishna, Maheshwar Lakkireddy, Gouru Naveen. "A Study of Exchange of Failed Implant with Intramedullary Interlocking Nail in Fractures of Femur and Tibia". Journal of Evolution of Medical and Dental Sciences 2015; 4;74;12920-27

IAJPS 2019, 06 [05], 11246-11249

- 6. Lakhey S*, Maheshwari J*, Malhotra R. FACTORS AFFECTING IMPLANT FAILURE IN FRACTURE OF THE SHAFT OF FEMUR. Journal of Nepal Medical Association 2003; 42: 197-200
- 7. Brinker MR, O'Connor DP. Exchange nailing of ununited fractures. JBJS. 2007 Jan 1;89(1):177-88.
- 8. Oh I, Nahigian SH, Rascher JJ, Farrall JP. Closed intramedullary nailing for ununited femoral shaft fractures. Clin Orthop Relat Res. 1975;106:206-15.
- 9. Kempf I, Grosse A, Rigaut P. The treatment of noninfected pseudarthrosis of the femur and tibia with locked intramedullary nailing. Clin Orthop Relat Res. 1986;212:142-54.

- Wu CC Treatment of Long-Bone Fractures, Malunions, and Non-unions - Chang Gung Med J 2006; Jul-Aug 29(4):347-57.
- Col AK Sharma, Maj Gen Ashok Kumar, Lt Col GR Joshi, John T John. Retrospective Study of Implant Failure in Orthopaedic Surgery. MJAFI 2006; 62:70-72.
- Brinker MR, O'Connor DP. Exchange Nailing of Ununited Fractures. J Bone Joint Surg Am.2007; 89:177-88.
- 13. Hierholzer C, Glowalla C, Herrler M, von Rüden C, Hungerer S, Bühren V, Friederichs J. Reamed intramedullary exchange nailing: treatment of choice of aseptic femoral shaft nonunion. Journal of orthopaedic surgery and research. 2014 Dec;9(1):88.