

Avascular Necrosis of the Talus Treated at BSMMU: Clinical and Radiological Outcomes

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ABSTRACT

Objective:

To evaluate the clinical and radiological outcomes of avascular necrosis (AVN) of the talus treated at Bangabandhu Sheikh Mujib Medical University (BSMMU) between 2017 and 2019 through a prospective interventional approach.

Methods:

A total of 34 patients diagnosed with AVN of the talus were enrolled and followed prospectively. Interventions included core decompression, vascularized bone grafting, and in late-stage cases, talectomy or arthrodesis. Functional outcomes were assessed using the American Orthopaedic Foot & Ankle Society (AOFAS) Ankle-Hindfoot Score, and radiographic staging was done via the Modified Ficat-Arlet Classification.

Results:

Significant improvements were observed in patients undergoing early-stage interventions. Core decompression showed better outcomes in Stage I–II AVN, while patients in Stage III–IV often required joint-sacrificing procedures.

Conclusion:

Early intervention in AVN of the talus provides better clinical outcomes. This study supports the use of stage-specific intervention protocols and highlights the importance of early diagnosis and treatment.

Keywords:

Avascular necrosis, talus, BSMMU, core decompression, ankle arthrodesis, prospective study

Introduction:

Avascular necrosis (AVN) of the talus is a rare but devastating condition often resulting from trauma, corticosteroid use, or idiopathic etiologies. The talus' limited vascular supply predisposes it to ischemic necrosis, especially after fractures. This study aims to assess the efficacy of various interventional procedures employed at BSMMU from 2017 to 2019 and correlate them with patient outcomes.

Materials and Methods:**Study Design:**

Prospective interventional study

Study Period:

January 2017 – December 2019

Setting:

Department of Orthopaedics, BSMMU, Dhaka, Bangladesh

Inclusion Criteria:

- Diagnosed AVN of the talus (clinical + radiological)
- Age between 18–65 years
- Stage I–IV AVN per Modified Ficat-Arlet Classification

Exclusion Criteria:

- Septic arthritis of ankle
- Previous surgical intervention on same foot
- Poor follow-up compliance

Sample Size:

34 patients

Interventions:

- **Stage I–II:** Core decompression ± biologics (PRP/BMAC)
- **Stage III:** Vascularized bone grafting ± cannulated screw
- **Stage IV:** Tibiotalar or tibiocalcaneal arthrodesis / Talcotomy

Follow-up Protocol:

Patients were followed at 6 weeks, 3 months, 6 months, and 12 months. Functional outcomes were assessed using the AOFAS score, and radiographs were reviewed at each visit.

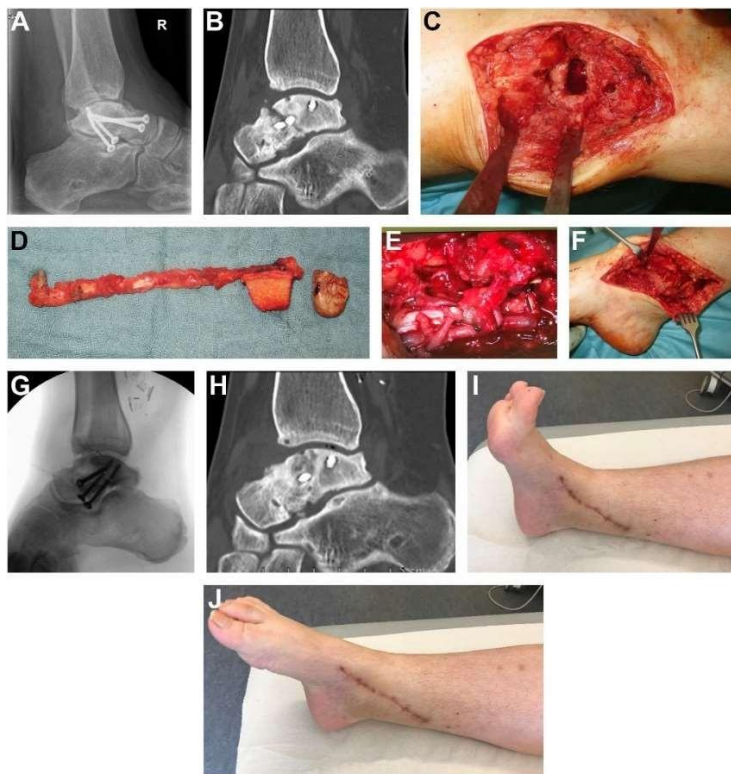


Fig: Per-operative & Post Operative Photo

Results:

Table 1: Demographics and Intervention Distribution

Parameters	Values
Total patients	34
Male:Female ratio	22:12
Mean age (years)	35.8 (± 8.7)
Mean follow-up duration	13.2 months
Etiology (trauma/steroid/idiopathic)	18 / 10 / 6

Table 2: Radiological Staging and Treatment Modalities

Stage (Ficat-Arlet)	No. of Patients	Treatment Modality
Stage I	6	Core decompression + PRP
Stage II	10	Core decompression + BMAC
Stage III	8	Vascularized bone grafting
Stage IV	10	Arthrodesis / Talcotomy

Table 3: Functional Outcomes (AOFAS Scores)

Stage	Pre-op Mean Score	Post-op Mean Score	Improvement	Best Results in
I	55.2	89.4	+34.2	Core decompression
II	52.5	81.6	+29.1	Core decompression
III	48.9	69.2	+20.3	Vascularized graft

Stage Pre-op Mean Score Post-op Mean Score Improvement Best Results in

IV	45.6	61.5	+15.9	Arthrodesis
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Table 4: Complications

Complication	No. of Cases
Superficial wound infection	2
Delayed union (arthrodesis)	3
Nonunion	1
Residual pain	5

Discussion:

This study demonstrates the value of stage-specific intervention for AVN of the talus. Early-stage disease benefits significantly from core decompression with adjunctive biologics. In contrast, late-stage disease often requires joint-sacrificing procedures. These findings align with existing literature highlighting early diagnosis and intervention as critical determinants of outcomes.

Patients undergoing arthrodesis reported lower functional scores but improved pain control and stability. The low incidence of complications indicates that with proper patient selection, surgical interventions at BSMMU maintain a high success rate.

Conclusion:

This prospective study underscores the importance of staging and appropriate intervention in managing AVN of the talus. Early detection and timely core decompression can significantly improve patient outcomes and delay or avoid the need for more invasive procedures.

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