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**ABSTRACT** Introduction- Tendoachilles (TA) rupture is a common tendon injury seen in middle-aged patients. Most of the times it occurs while doing some sports activity or following trauma. Due to lack of pain and ability to partially retain the plantar flexion, 10-25% of the injuries are missed by the patients as well as diagnosis might go wrong by the doctors. In such cases, if the treatment is delayed, then the repair of the injury becomes difficult. Various surgical procedures such as primary repair, reconstruction with V-Y plasty, local tendon transfer augments (Flexor hallucis longus or peroneus brevis), free tissue transfer including synthetic grafts and allografts to bridge the gap have been described. The purpose of the study was to assess the postoperative functional outcome of gastrocnemius advancement flap outcome of patients using AOFAS and ATRS scoring at 6 weeks,3 months and 6 months post-operatively. Also, to evaluate the time for Regaining routine daily activity or range of movements (Planter flexion) and the complications occurring post-operatively following Chronic TA repair with short flexor hallucis tendon transfer with V Y plasty. **Methodology-** This study was conducted at a tertiary care centre in Kolhapur. In this study 10 cases of Chronic Tendoachillies tear were admitted under Department of Orthopaedics and managed operatively using short flexor hallucis tendon transfer with V Y plasty. The Study period was for 15 months (November 2020- February 2022). Study design was Prospective, Interventional. **Conclusion-** The functional outcome of chronic Achilles tear treated with Gastrocnemius advancement flap augmented with short Flut transfer is excellent. The short term functional outcomes of the patients are excellent with the ability to perform the pre-injury activities can be justified by improved AOFAS and ATRS scores.

**KEYWORDS**: Tendoachilles, tendon injury, plantar, flexion, sports

# INTRODUCTION

Tendoachilles (TA) rupture is a common tendon injury seen in middleaged patients which may occur during sports activity or following trauma.<sup>[1]</sup> Due to lack of pain and ability to partially retain the plantar flexion, about 10-25% of these injuries may be missed by the patients or even misdiagnosed by the doctors, <sup>[2,3]</sup> In such cases, the treatment is delayed. The tendon repair after 4 to 6 weeks of such injury is difficult as the ends are retracted and atrophied with a short fibrous distal stump.<sup>[4]</sup> Various surgical procedures such as primary repair, reconstruction with V-Y plasty, local tendon transfer augments (Flexor hallucis longus or peroneus brevis), free tissue transfer comprising of synthetic grafts and allografts to bridge the gap have also been described. Some of the techniques have been combined, such as tissue advancement and tendon transfer. <sup>[56]</sup> The use of flexor hallucis longus (FHL) to augment the TA was first described by Hansen in 1991 and has been used for patients with Achilles tendinosis or large rupture defects.<sup>[6]</sup> There is a Watershed area of 2-6cm proximal to insertion -Lowest vascularity prone to rupture. The purpose of the study was to assess the postoperative functional outcome of gastrocnemius advancement flap augmented with short FHL transfer and VY plasty in chronic TA tear.

# METHODOLOGY

The study was conducted at Dr. D Y Patil Hospital, Kolhapur. In this study 10 cases of Chronic tendoachillies tear were admitted under Department of Orthopaedics and managed operatively using short flexor hallucis tendon transfer with V Y plasty. The study period was for 15 months (November 2020- February 2022). All the necessary investigations for pre-operative anesthetic fitness were also done. Informed written consent was taken from all the patients prior to surgery. AOFAS and ATRS scoring system were used for clinical outcome of operated patients. Patients from the age group of 30 to 60

years, who had closed injuries of tendoachilles rupture (Mid zone Tear), palpable gap or defect of >3 cm between two ends, 6 weeks to 3 months old injuries and Re-rupture Injuries of tendoachilles were included in the study. Whereas, patients with all compound acute or open injuries of tendoachilles tear, combination with Fracture Foot and Ankle and former application of local Corticosteroids in tendon area were excluded for the study. The surgery was performed in the prone position under tourniquet control. A posteromedial incision was given along the medial border of the TA. The flap was raised till the lateral border tendoachilles; the sural nerve was isolated and protected. The paratenon was opened longitudinally, and the ends of the ruptured tendon were exposed. Any proof interposing fibrosis between the retracted tendon ends was debrided. The thickened and scarred paratenon was excised. The FHL tendon was transacted on the medial surface of the calcaneus with the ankle and hallux in plantar flexion to maximize the length of the harvested tendon. The cut-end of FHL tendon was prepared with stitches using ethibond No-5 suture. A bone tunnel was drilled (6 to 8 mm depending on the thickness of harvested FHL tendon) in the calcaneum starting at the superior calcaneal tuberosity anterior to the insertion of TA and Stitched FHL tendon. Proximal end was securely fixed with ethibond no-5 and passed after drilling with help of zig. Suture Disc or button placed over heel. If the gap between the tendon ends after debridement was >3cm; in these patients, to approximate the tendon ends for an end to end repair. these patients were treated with the gastrocnemius V-Y plasty. As an augmentation procedure, Short FHL tendon transfer was performed in all these patients. The FHL and TA were also sutured side to side at the proximal stump. The wound was closed in layers after putting a negative suction drain. The patients were followed up at six weeks, three months, six months, 24 months.

CASE

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## Volume - 12 | Issue - 11 | November - 2022 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

A 51-year old male patient who had fallen from two-wheeler and with RTA injury was admitted to the department of orthopaedics. The injury was 3 months old. Patient had no history of any chronic illness or neurovascular compromise.



Plain X-RAY







Axial MRI IMAGE

Sagittal MRI IMAGE

Coronal MRI IMAGE Intra-operative images





Chronic TA rupture



V-shaped incision



Sutured in shape of Y



Augmentation with FHL Graft

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Demographic Parameters
Variable
                     Number
                                           \% (N = 10)
SEX
Male
                     6
                                           60
Female
                     4
                                           40
Side
Right
                                           70
                     3
                                           30
Left
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Mode of injury					
Indian closet	4			40	
Road traffic accident	2			20	
Fall of heavy weight	2			20	
Sports injury	2			20	
Age					
30-40	4			40	
40-50	3			30	
50-60	3			30	
ATRS score at 6 mor	ths				
Excellent	7		70%		
Good	2	2			
Fair	1	10%			
AOFAS Score at 6 m	onth				
0 - 20		0	0		
21 - 40		0	0		
41 - 60		2	2		

3

5

Complications

61 - 80

81 - 100



#### DISCUSSION

Although these fascial advancements of more than 5 cm usually close the defect and permit end to end repair, it has been reported to result in increased muscle weakness. In our study we have preserved the distal stump with debridement done of only interposed fibrous tissue. This distal stump in important for side to sidetenodesis of FHL tendon to tendoachillies. Total of 10 cases were studied in which 6 was male 4 was female operated for chronic tendoachilies repair with FHL tendon augmentation and V-y plast according to AOFAS score and ATRS score at 6 months 7 patients comes under excellent ,2 patients under good and 1 patient comes under the fair outcome. Out of which 2 patients got post- operative complication of weakness of plantar flexion in which 13% got only 10-20 degree of plantar flexion, 1 patient got deep infection and 1 got delayed healing or gaping. There were few limitations of our study. The sample size is less, out time of follow up is small. A large sample size with longer follow up would have given a better understanding of long-term adverse effects. Smaller gaps (up to 2-3cm) can be repaired with end-to-end repair technique. For larger defect, an attempt of tendon mobilization may be performed by placing a Krakow stitch with ethibond at the proximal segment and applying manual tension for several minutes. However, excessive tension must be avoided, and the surgeon should not hesitate to perform a fascial advancement for gap reduction in such cases. For defects of 2-3 cm, a gastrocnemius recession is adequate for the approximation of tendon ends; however, tendon defects of >3cm, often need V-Y advancement and turndown flap. Although these fascial advancements of more than 5 cm usually close the defect and permit end to end repair, it has been reported to result in increased muscle weakness . Takao et al. reported strength deficits up to 23% in 10 patients managed with gastrocnemius fascial flaps for neglected Achilles ruptures.

### CONCLUSION

From the above research we can conclude, that the management of tendon defects of >3cm, often need V-Y advancement and turndown flap. A transtendinous insertion of FHL tendon preserves normal lever arm of the Achilles tendon and thus providing physiological strength. The functional outcome of chronic Achilles tear treated with Gastrocnemius advancement flap augmented with short FHL transfer is excellent. The short term functional outcomes of the patients are excellent with the ability to perform the pre-injury activities can be justified by improved AOFAS and ATRS scores. The key to successful treatment of these patients is by strictly following post op protocol and rehabilitation

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RESULT

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