

IAS NEWSLETTER



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ARTICLES IN THIS ISSUE

Wrist Arthroscopy assisted Bone grafting & fixation of Scaphoid Non-union

ACL with medial meniscus tear in a patient with bilateral Genu Valgum- A case report and review of literature

EXPERTS OPINE



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Hidden Lesions of Menisci: Ramp Lesions & Root tears

Meniscal RAMP lesions:

Always probe through PM portal and verify

<1.5cm Stable tears:

Trephine & treat conservatively

>1.5 cm Unstable tears:

Repair using one or two PM portals using suture lasso

Meniscal Root tears:

Two techniques for repair:

1. Transtibial suture pullout technique:

Bites are taken of the meniscal root, fibre wires are shuttled across the tibial tunnel and fixed using a button/ suture post/ swive lock anchor

2. Suture anchor fixation:

Suture anchor is inserted via high PM portal.

Bites are taken off the meniscus using antegrade suture passing device like knee scopion.

This technique is useful during combined HTO+ root repair

WRIST ARTHROSCOPY ASSISTED BONE GRAFTING & FIXATION OF SCAPHOID NON -UNION



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Abstract:

Arthroscopic bone grafting and fixation for scaphoid non-union helps to achieve good bone healing. Twenty six out of twenty-seven achieved union, with average 61 days. The visual analog score, grip strength and the Mayo wrist score improved significantly.

Introduction:

The goals of treating scaphoid non - union is to achieve bone healing and to prevent arthritis of the wrist by correcting any carpal deformities. Various bone grafts like cancellous inlay bone grafting, wedge bone grafting and vascularized bone grafting have been described.

Union rates for non vascularized bone grafting is 80% to 95% while that for vascularized bone grafting is around 40% to 100% (1).

Basic tenets of managing non-union are debridement, bone grafting and rigid internal fixation while maintaining blood supply. Minimal invasive procedures have always kindled the interest of both surgeon & the patient. Earlier studies reported 42% to 83% of the associated ligament injuries in patients with acute scaphoid fractures and non-unions. Arthroscopy can confirm the presence or absence of associated intrinsic and extrinsic ligamentous injuries (2). Minimal morbidity of the arthroscopic approach for the treatment of scaphoid non-union is supposed to result in less postoperative stiffness and increased functional outcomes (3).

Arthroscopy for the treatment of acute scaphoid fractures helps us to assess the quality of reduction, position of the hardware and also to identify and manage associated injuries (3).

Material and methods:

Symptomatic scaphoid non-union more than 3 months without avascular necrosis of the proximal fragment, severe deformities, or arthritis treated between 2017 to 2021, Age between 18 to 60 years and non-smokers were included. Investigations included X-rays, MRI to assess the vascularity of the proximal pole and sometimes CT scan to assess the deformity

A total of 27 patients were included. Assessment was done under following headings

- Visual Analog Score VAS (points)
- Grip strength (Kg force)
- Flexion extension arc (degrees)
- Mayo Wrist Score - MWS (points)

Surgical technique

Both radiocarpal & midcarpal joint, 3-4 portal, 6-R portal and midcarpal radial portal were used. 1.9 or 2.4mm arthroscope, 2.0 to 2.4mm burr were used to freshen the non-union site.

Curette comes in handy and tissue glue was used. The wrist is taken out of traction and fixation was achieved by HCS / 'K' wire (Fig 1 & 2).

Result:

Bony union achieved in 26 out of 27 patients and the remaining one patient underwent open reduction and internal fixation. Average duration for union was 61 days. The outcomes post arthroscopic bone grafting have been summarized in Table I. Other associated lesions and their treatment have been outlined in Table 2.

Associated intra-articular lesions requiring intervention:

General rules for managing associated injuries:

- Partial tears of SL & LT were reduced & stabilized with 'K' wire.
- Only unstable foveal TFCC tears were repaired

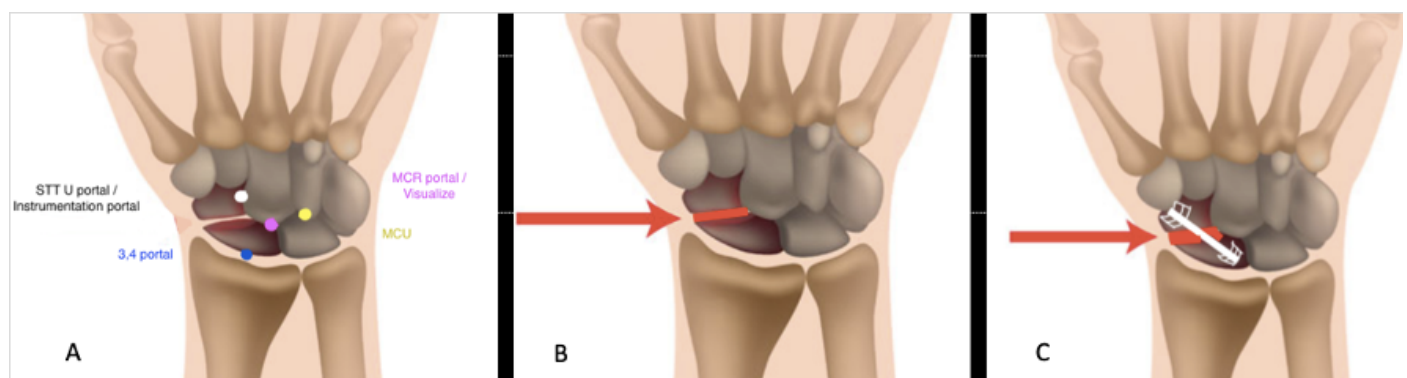


Fig 1: Steps of surgery (A)Portals of wrist (B)bone grafting (C) screw fixation

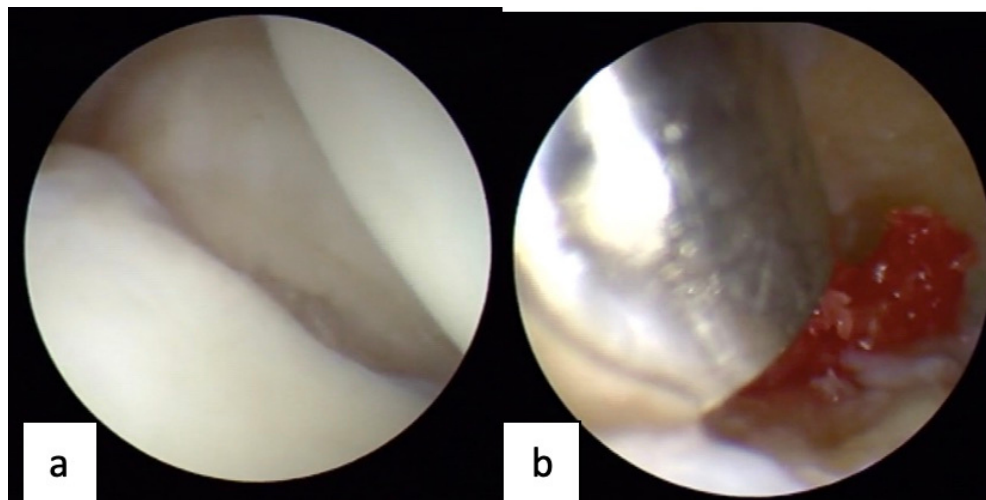


Fig 2: Arthroscopy images
(a)Scaphoid non union site (b) bone grafting the non-union site

Discussion:

Arthroscopy preserves the vascular structures of the scaphoid by saving soft tissue attachments. Autogenous cancellous bone grafting from the iliac crest and firm fixation with a headless compression screw is an excellent option for scaphoid non-unions(1)(6)(7).

Arthroscopic bone grafting for scaphoid non-union is an effective procedure (Improvement of Pain, range of movement and wrist score). The arthroscopic procedure gives a good cosmetic outcome and with practice, the time required to perform the procedure can be reduced to 75 minutes (mean). Arthroscopy for extended indications like proximal fragment AVN is still an area for further workup.

OUTCOME MEASURE	Pre op (SD)	Last follow up (SD)	Mean difference (95%)	p value
VAS (points)	5	1	4	<0.001
Grip strength (Kg force)	21	35	14	<0.001
Flexion extension arc (degrees)	140	150	10	
MWS (points)	60	85	25	<0.001

Table 1: Showing the outcome after arthroscopic bone grafting for scaphoid non-union

INTRAARTICULAR LESIONS	NUMBER OF PATIENTS	REQUIRING INTERVENTION
TFCC	5	2
SL	2	2
LT	1	1
CHONDRAL INJURY	2	

Table 2: Intra-articular lesions and the number of patients requiring intervention

Conclusion:

Arthroscopic bone grafting for scaphoid non-union is an effective procedure, gives good cosmetic appearance & outcomes

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ACL WITH MEDIAL MENISCUS TEAR IN A PATIENT WITH BILATERAL GENU VALGUM- A CASE REPORT AND REVIEW OF LITERATURE



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Cuttack

Introduction:

Simultaneous ACL reconstruction with either high tibial osteotomy / lateral open wedge osteotomy for genu varum has been proven to have good functional outcome(1) (2). Also, lateral open wedge femoral osteotomy is reported to be a reliable procedure for treating genu valgum in young patients(3) . We present a case report of a young boy with symptomatic knee instability and occasional medial sided knee pain and locking.

Case presentation:

20-year-old male patient, obese, with B/L genu valgum presented with pain and instability in right knee one year after a sports injury. He had no significant past medical history.

Physical examination revealed B/L genu valgum. On knee flexion test his valgus deformity disappeared suggesting a valgus of femoral origin. His anterior drawer test was positive with 10 mm anterior translation, Lachman test positive, Mc Murray test positive for medial meniscus. Dial test, varus/valgus stress test, posterior drawer test were negative. MRI of the Right knee showed complete ACL tear and bucket handle tear medial meniscus(FIG1).

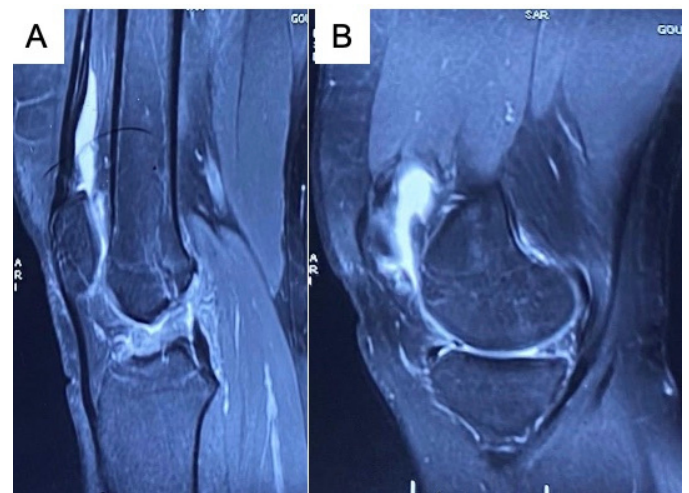


FIG 1: MRI of affected right knee. A: Complete ACL tear.
B: Absent posterior horn of medial meniscus suggestive of bucket handle tear of medial meniscus.

Preoperative Planning:

Scanogram of both lower limb revealed a MLDFA [mechanical distal femoral angle] of 84.23 degree, MPTA [medial proximal tibial angle] was 88.87 degree by using Medcad software(FIG 2). Hence, the valgus deformity was found to be originating from distal femur. As there was an associated limb length discrepancy also [rt lower limb 8 mm shortening]

we planned lateral open wedge osteotomy of distal femur[4] followed by all inside reconstruction for ACL tear.

Surgical technique:

Osteotomy was performed first followed by ACL reconstruction. The patient was positioned in supine position , distal femur was approached laterally. Anterolateral surface of distal femur was exposed . Osteotomy site was marked 3 cm above lateral epicondyle. Two K wires were inserted directing distally and medially[oblique to joint line aiming towards medial epicondyle].

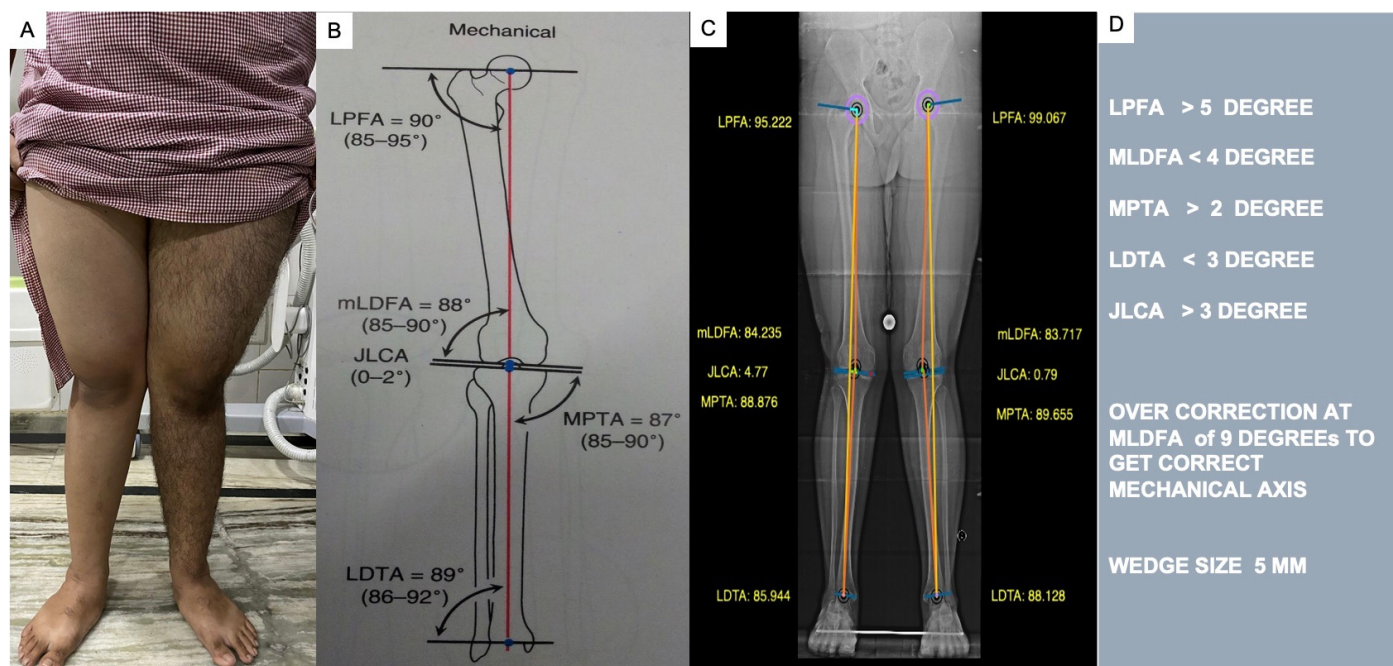


FIG 2: Alignment of the lower limb. A: Clinical alignment of the lower limbs showing genu valgum. B: Normal parameters on scanogram. C, D: Scanogram parameters of the patient.

A motorised saw was then used to cut the bone just above and close to the k wires . Osteotomy was carried out lateral to medial keeping 1 cm bone medially intact. A lamina spreader was used to create gap at osteotomy site slowly and carefully. Keeping the lamina spreader inferior with 6 mm lateral wedge the osteotomy was fixed using lateral distal femur locking plate and iliac crest bone graft to fill the osteotomy gap(Fig 3).

Second step was to perform arthroscopic ACL reconstruction. Diagnostic arthroscopy revealed an ACL tear ,medial meniscus bucket handle tear and chondral injury of the medial femoral condyle. Semitendinosus graft was harvested and made into 4 strands graft (7cm length, 8mm diameter) for ALL inside ACL reconstruction using adjustable device both sides. Partial meniscectomy was performed for the medial meniscal tear and microfracture was performed for the medial femoral chondral lesions.

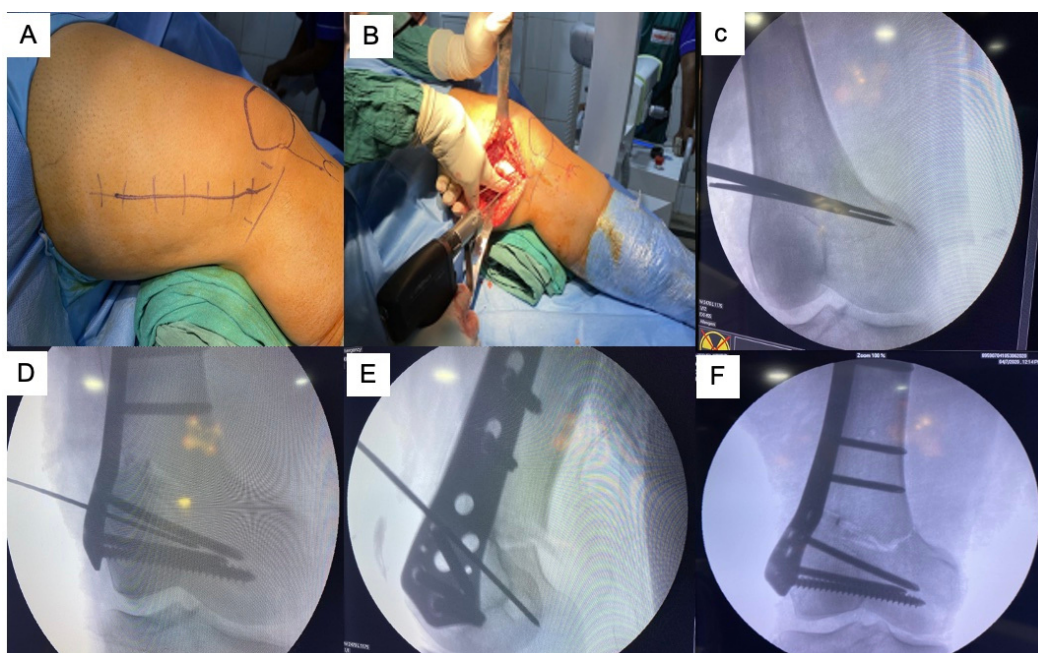


FIG 3: Surgical technique: A: Skin incision. B: Osteotomy site. C: Distracting the osteotomy site D, E: Plate in situ with K wire in the ACL femoral tunnel F: Final plate construct.

Keeping the aimer of femoral jig at the femoral ACL footprint, femoral tunnel was drilled using outside in technique using a flipcutter starting below the plate.

Tibial tunnel was drilled similarly. Graft was shuttled across and fixed using adjustable loop on both sides.

Post operative management:

Patient was advised non weight bearing for 2 weeks followed by toe touch walking with knee brace support. Patient was allowed full weight-bearing after 6 weeks as post-operative x ray done at 6 weeks showed signs of bony union.

Closed chain knee exercises were started after 6 weeks and continued till 12 weeks. After 12 weeks open-chain knee exercises were started.

Scanogram was repeated after one year to see correction of genu valgum. The values were compared with pre op value and are depicted in Fig 4.

At one year follow up, Lachman test was negative, anterior drawer test had 4 mm anterior translation. Patient has no pain or instability during daily activities. His lysholm knee score improved from 48 to 91.

Discussion:

Genu valgum is a coronal plane malalignment which needs to be corrected to prevent lateral compartment osteoarthritis. Distal femur is the preferred site for osteotomy for correcting genu valgum as most of these deformities originate in the distal femur.

The two considerations are either a medial closing wedge or lateral opening wedge osteotomy(4).

As we were more familiar with the lateral approach we choose do a lateral opening wedge to correct the valgus deformity. Open wedge techniques are generally discussed for correction of tibial varus deformities while only few studies discuss the outcomes of lateral open wedge osteotomy for distal femur(3). In contrast to earlier studies recent articles report good outcomes after Lateral open wedge distal femoral osteotomy for genu valgum with fewer complications.

This osteotomy has an additional advantage of leg length increase and improved patella stability apart from improving the alignment(2). Simultaneous ACL reconstruction and distal femoral osteotomies have known to produce good outcomes. Combining these two reduces multiple hospitalisations and rehabilitation. With adequate precautions plate interference can be prevented with femoral tunnel placement and the endobutton.

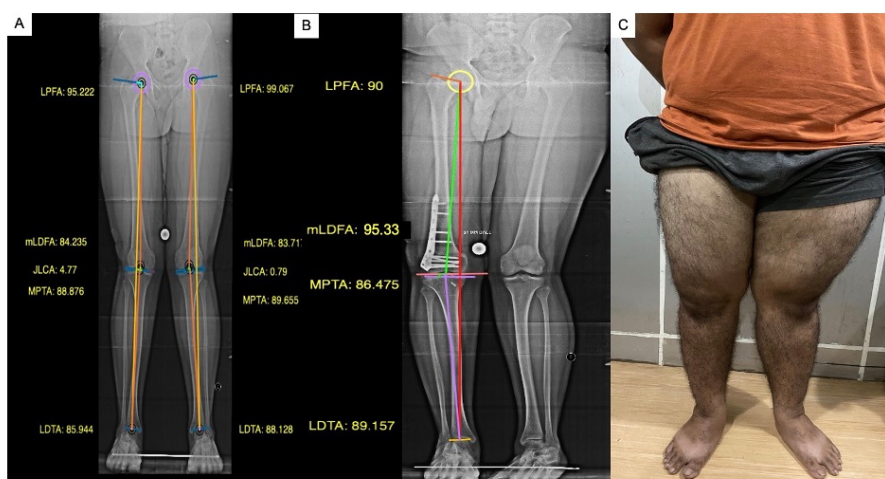


Fig 4: Post-operative improvement.
A: Preoperative alignment.
B: 1 year follow-up scanogram. C: 1 year Clinical follow-up

Parameters	Preoperative status	Post-operative status
LPFA	95.22 degree	90 degree
MLDFA	84.23 degree	95.33 degree
MPTA	88.87 degree	86.47 degree
LDFA	85.94 degree	89.15 degree
JLCA	4.33 degree	1 degree

Conclusion:

Combined arthroscopic ACL Reconstruction with Lateral open wedge distal femoral osteotomy is a reliable option for correcting genu valgum with ACL tear.

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