

Short Term Outcome Of Tibial Defect Reconstruction In Primary Total Knee Arthroplasty: A Retrospective Study

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DISCLOSURE

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CONFLICT OF INTEREST - None

INTRODUCTION AND OBJECTIVE

Lately presented osteoarthritic knees with severe varus deformity are frequently associated with uncontained proximal tibial bone defect. Restoring tibial bone defect is important to provide stable placement of the tibial component, proper alignment of the implant, sizing and over all limbs. These Tibial defects can be addressed in many different ways. This in addition to soft tissue balance achieves best option for successful TKA outcomes.



Aim of the study :- To analyse and report the **Short term results of tibial defect reconstruction of small to moderate size, not having instability, with screw and cement surgical technique.** Comparing Pre-operative radiographic classification of osteoarthritis with post operative radiographic following the Knee replacement, Functional outcome is measured with KSS & OKS scores.

METHOD

This was a retrospective analysis of the outcome of screw with cement technique

The type and the size of the bone defect are the major concern in Osteoarthritis and regarding the re-construction of the bone defect and the surgical technique. Surgical technique is demanding because the defect crater could be variable in coronal and sagittal plane and Reconstruction with multiple cortical or cancellous screws and cement as a filler.

Subject Profile:-

Nov 2017 to January 2021,

68 pts, (Bilateral -28 ,Unilateral - 40).

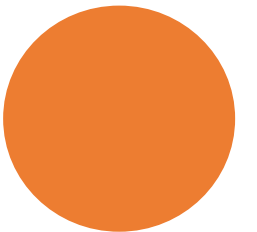
Male 30 (Bilateral- 11 , Unilateral -28)

Female- 38 (Bilateral-17 , Unilateral- 12)

Total No. of 96 knees, Mean age of 60yrs.

All were Varus deformity – Osteoarthrosis 68, Traumatic – 4.

All patients had an uncontained posterior medial peripheral defect on the tibial plateau > 5mm deep of small to moderate size.

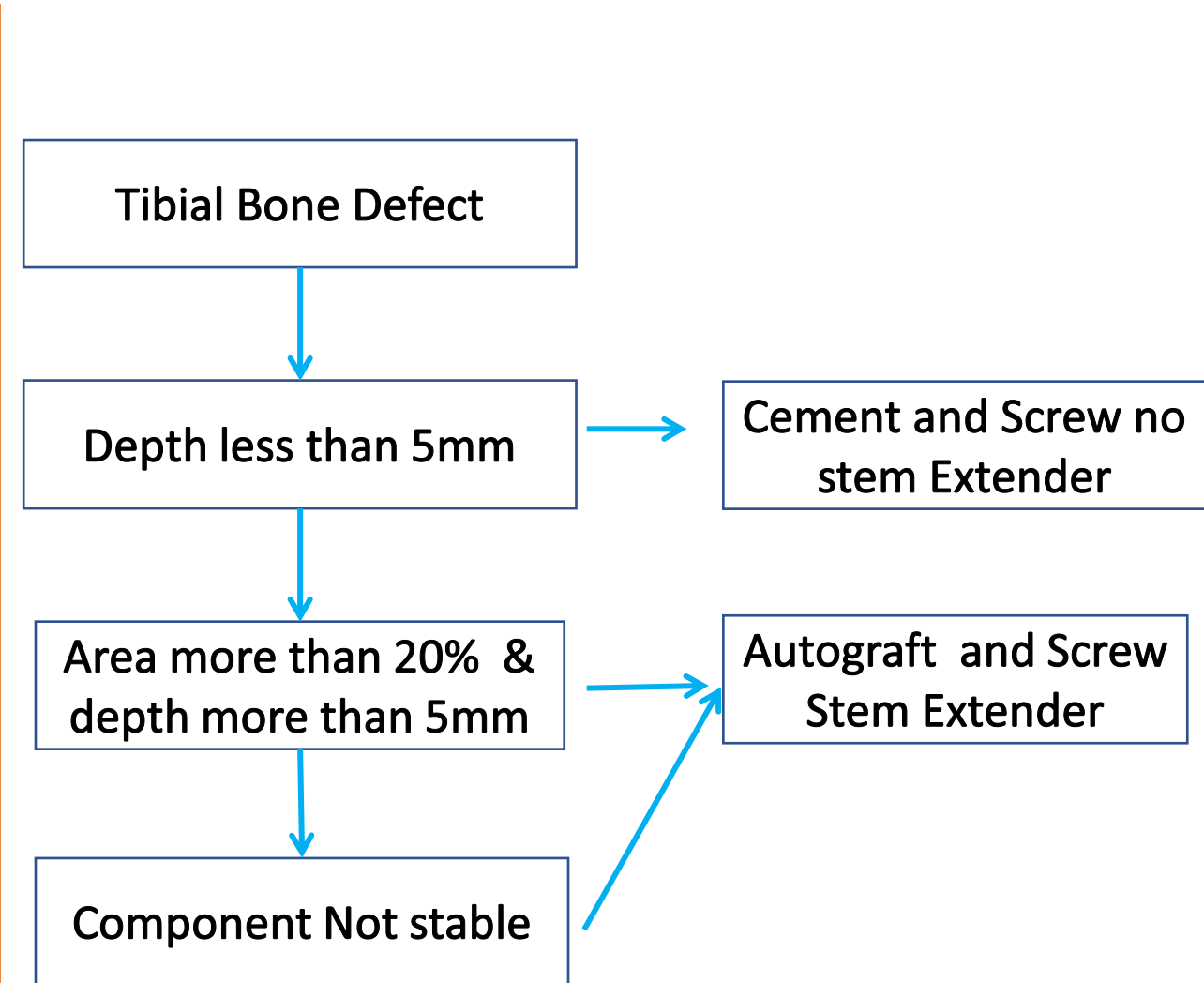


SURGICAL TECHNIQUE & RECONSTRUCTION ALGORITHM

OPERATIVE PROCEDURE

Intraoperatively the defects were measured after the proximal tibial cut was taken. A conservative tibial cut was always taken (8mm from the lateral tibial plateau). Defect dimensions of length, width and depth were measured using a mm scale. The width of the proximal (cut) tibia was also measured. The ratio of defect to proximal tibial cut surface was measured. This is Imp in assessing the stability of component

Stability was assessed with the trial components in situ, with manually applied varus and valgus stress. In the depth of defect, Screw 3.4 or 4.5 were placed after preparation of tibia and screw head were placed at least 1mm beneath tibial plate to prevent direct contact and Cement as a interface. (All surgeries are performed by single surgeon).



We didn't use any stem extender



RESULTS

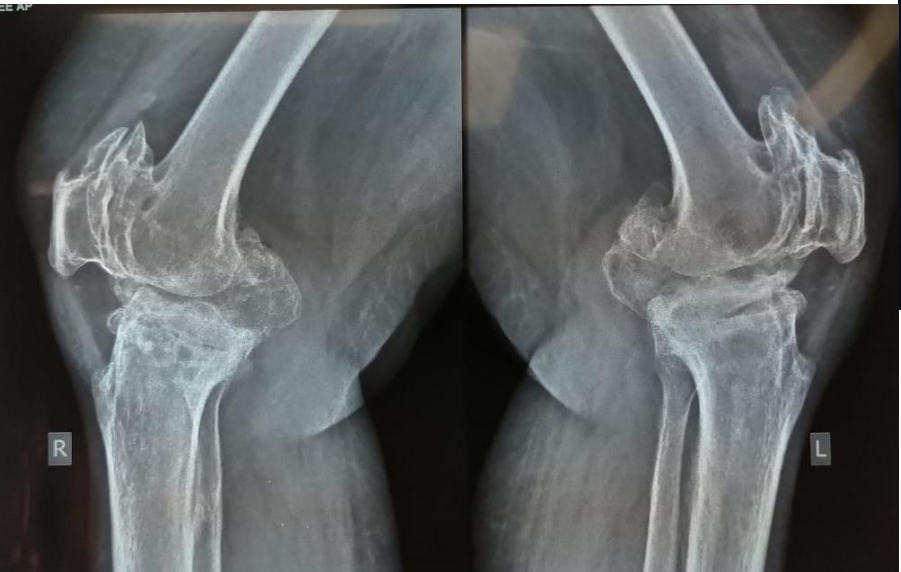
The clinical results are obtained including the range of movements knee society KSS & OKS scores good to excellent and follow up

74% of Patients shows good, 21% shown average and 5% patients below average due to poor understanding of the procedure TKR

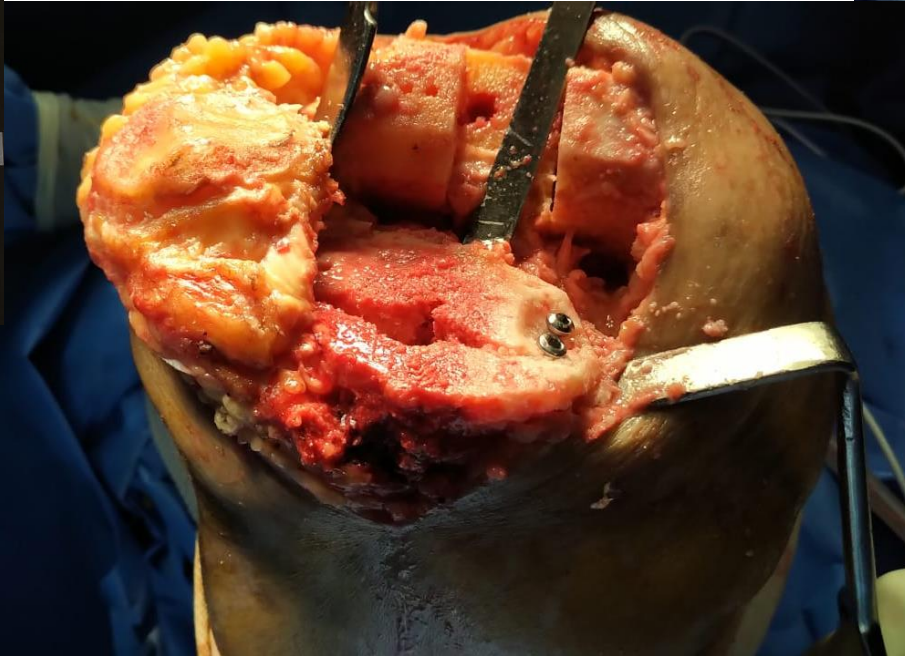
Average follow-up was 1.2 yrs	
Cortical or Cancellous Screws and Cement	All Cases
Loosening of Cement	Nil
Gap in between the Cement and tibia	Not seen
Instability in 1 ½ yr.(avg)	Nil
Infection secondarily	Non

ACHIEVEMENTS

	Pre surgery	Post Surgery
Mean Range of Flexion	108°(60-135)	111°(85-115)
Mean Flexion Contracture	8°(0° -35°)	1°(0° – 5°)
Mean KSS	43 (5 – 80)	90 (80 -100)
Mean Function Score	48.8(15 - 80)	79.4(55 – 95)
Varus alignment	19.8°(15° – +35°)	0° [0° – +5°]



Pre-op



Defect after preparation 2 cortical screws used



Postop Followup 2 years

DISCUSSION

Many a times uncontained defect are seen posterior medial aspect specially in varus deformities of knees and it varies in forms like small to moderate area with depth. All cases were evaluated retrospectively , all subjects undergone Total Knee Arthroplasty with posteriorly stabilized component.

Knee having small to moderate defect and deformity reconstructed with screw and cement with above mentioned parameters, X-ray analysis of alignment there is no Recurrence of Deformity or Instability of the knee in our Short term series.

Study provides encouraging results regarding the Stability of Knee, Alignment of the Rectangular bone block-cement bone interface at a mean follow-up of more than 1.2yr.

Contd...

DISCUSSION

Different possible methods of treatment of tibial bone defect like higher bone resection and metal Augments and bone grafting. Disadvantage of Metal Augments and higher bone resections are prominently future revision may have problem and smaller tibia sitting on low quality bone respectively which may cause poor longevity of fixation.

The affect of the screw and cement technique maintained the bone stock and helps in future revision surgeries. It has a wider application at low cost, reliable and readily available method, no major complications, no extra logistics required as well as less time consuming .

In this study Screw and cement filler method of tibial defect in primary Total Knee Replacement not only allow restoration, but It is a simple and very effective method with being further bone Preservation.

CONCLUSION

Obtaining a strong knee with reconstruction of the uncontained Tibial Defect in the postero-medial area remain the prerequisite for the successful outcome of TKA

The size of the Defect typically does compromise immediate primary stability of the Tibial component when it is assessed, and depth of the defect is more than 5mm, primary Screw and Cement filler is indicated to reconstruct the defect.

To conclude with consistently good results in severely deformed joints were achieved with this simple and Cost-effective method.

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Thank You
Very much

