Sulcus-Deepening Trochleoplasty With A Dedicated Cutting Guide

Analysis Of Cartilage Integrity And Functional Outcomes At 3 To 10 Years

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Disclosure

Authors have no financial conflicts to disclose

Background : Deepening trochleoplasty & osteoarthritis

			Deepening technique	n	FU (years)	≥ Iwano 2
Metcalfe A.J.	JBJS	2017	Bereiter	39	5	7.7%
Song G.Y.	Arthroscopy	2014	Mostly Dejour (systematic review)	329	5.8	7.9%
Von Knoch F.	JBJS	2006	Bereiter	33	8.3	30%
Rouanet T	Orthop Trauma Surg Res	2015	Masse	34	15	65%

REASON ?

Natural history : OA at time of surgery progresses
Osteonecrosis
Cartilage damage during procedure
Lack of congruency
Increased pressure

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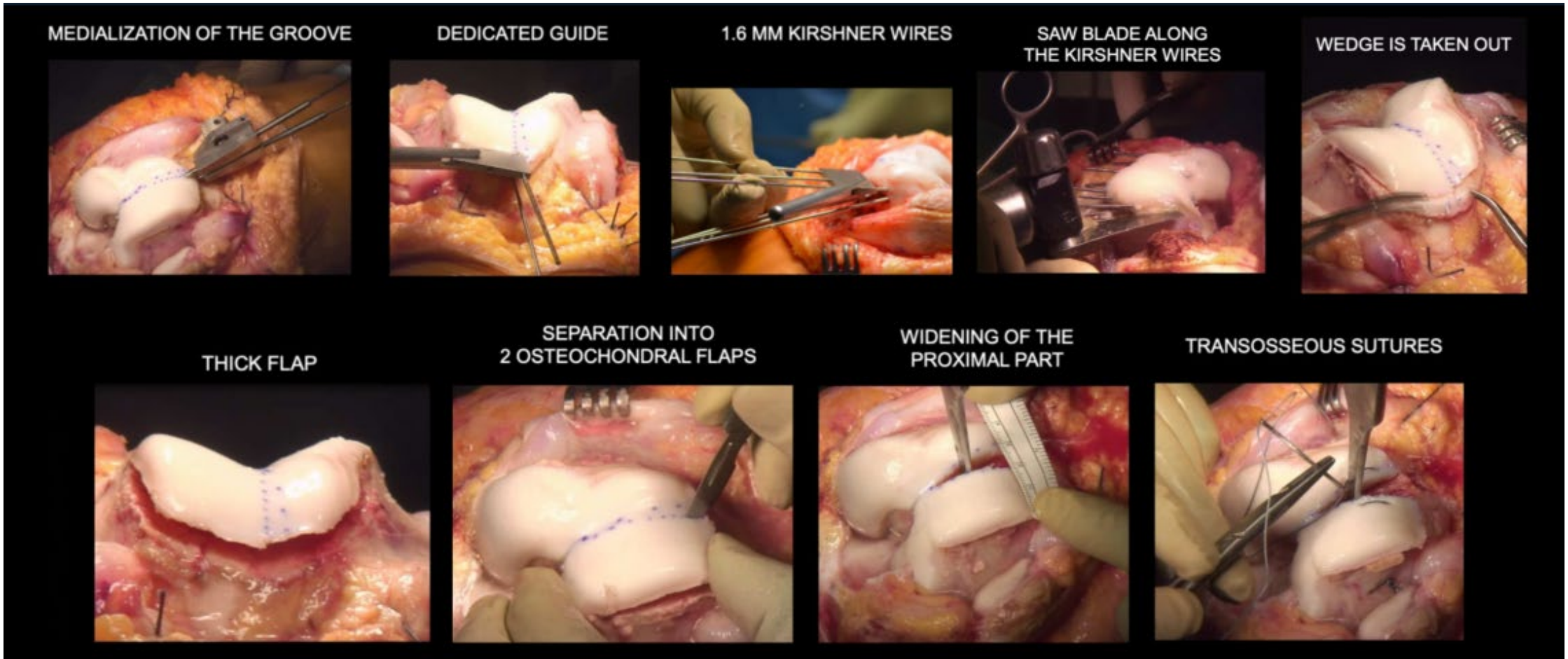
Hypothesis :

Sulcus-deepening trochleoplasty performed as a closing-wedge osteotomy (CW OT) using a dedicated cutting guide preserves subchondral bone and optimizes cartilage integrity, resulting in low rates of secondary patellofemoral osteoarthritis and sustained functional outcomes beyond 3-year follow-up.



Study Purpose :

Primary to assess patellofemoral cartilage **more than 2 years** after sulcus deepening trochleoplasty performed as a CW OT using MRI and CT arthrogram.

Secondary to evaluate **patient-reported outcome over time,** comparing the **first 3 years postoperatively** and **beyond 3 years**.

Material & Methods

Study population

Patients with patellar instability and **high-grade trochlear dysplasia**

Treated with sulcus-deepening trochleoplasty using a CW OT (2015-2022)

Prospective Follow- up

Patient-reported outcome measures collected annually

MRI & CT Arthrogram every 2 years

Cartilage Assessment

By independent radiologist, at baseline and final follow-up

Region assessed : medial/lateral facets of the patella & medial/lateral trochlea.

Garding via Modified Outerbridge Classification (MOC)

Good: MOC grade <2

Fair : MOC 3

Poor : MO 4

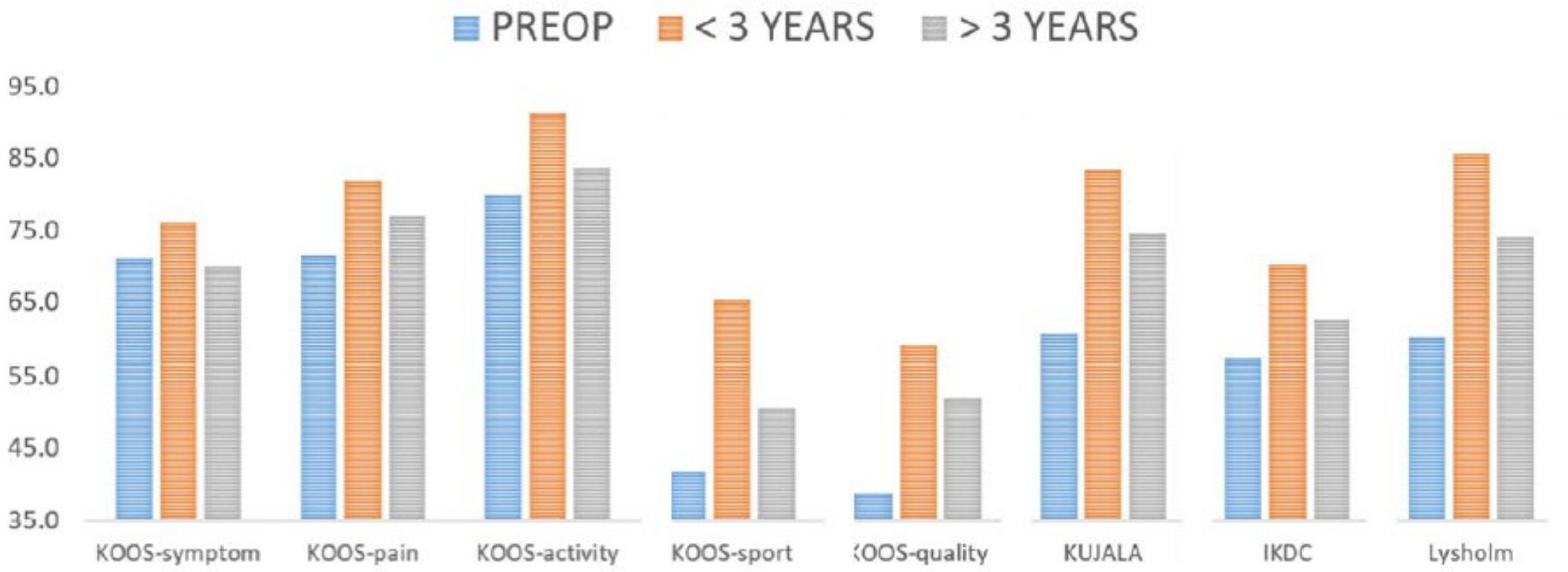
Results : Demographics (n=36)

Mean follow-up period was 5 years (range 3-10 years)

Age		23.9±7.3
BMI		23.2±4.6
Sex Ratio		0.8
Trochlea Dysplasia	Type B	75%
	Type D	25%
Tibial Tubercle Osteotomy		69.0%
MPFL Rec. With Hamstring Tendon		100%
Z Plasty Lateral Patello Femoral Lig.		91%
Lateral Flap Bone Thickness		5.1±1.0 Mm
Sulcus Angle Postop		137.0±8.2°

Results : Patient Reported Outcomes Measures (n=36)

No significant differences were observed for KOOS subscales, Kujala anterior knee pain scale, and Lysholm scores when comparing values at less than 3 years to more than 3 years postoperatively



Results : Postoperative Imagery (n=36)

Comparison of preoperative T2-weighted MRI and postoperative MRI & CT arthrogram.

GOOD OUTCOMES WERE OBSERVED IN 68.7%

Mean follow-up period was 5 years (range 3-10 years)

Results : Postoperative Imagery (n=36)

Comparison of preoperative T2-weighted MRI and postoperative MRI & CT arthrogram.

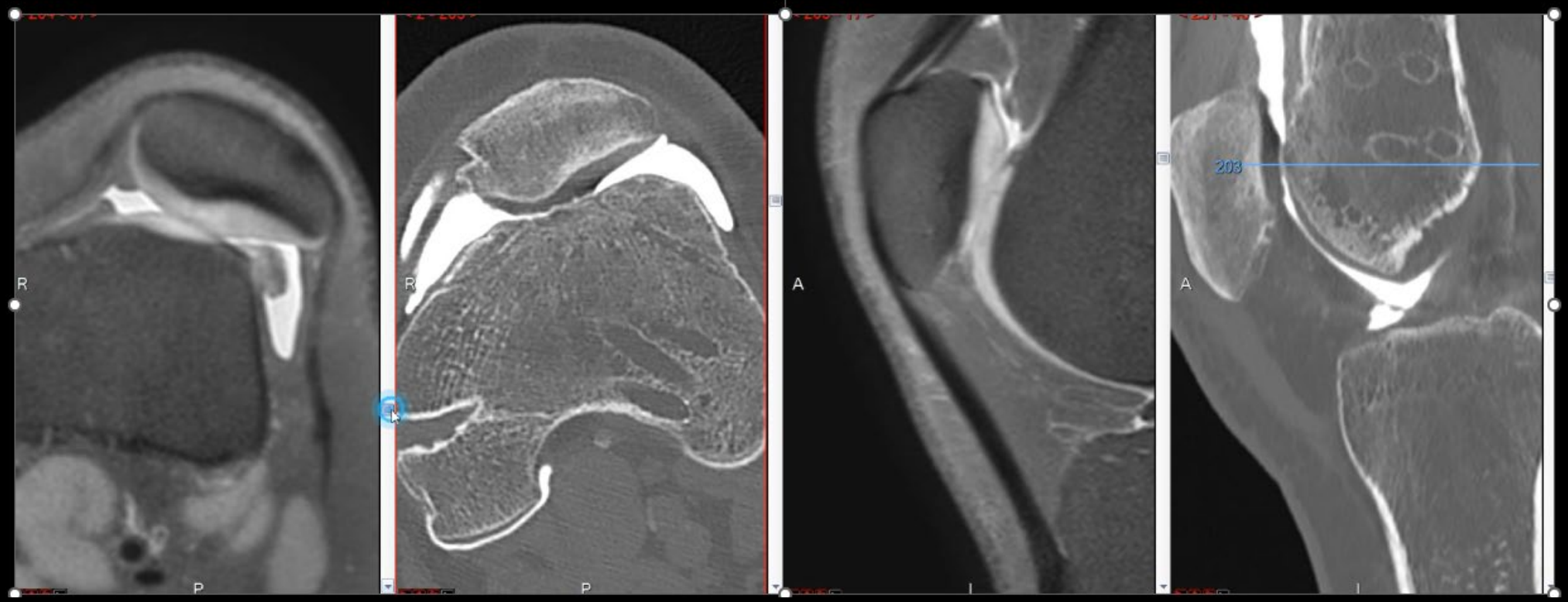
POOR OUTCOMES WERE OBSERVED IN 8.5%

Mean follow-up period was 5 years (range 3-10 years)

Results : Postoperative Imagery (n=36)

Comparison of preoperative T2-weighted MRI and postoperative MRI & CT arthrogram.

FAIR OUTCOMES WERE OBSERVED IN 22.8%



Mean follow-up period was 5 years (range 3-10 years)

Conclusion

Deepening trochleoplasty performed as a closing-wedge osteotomy using a dedicated cutting guide offers **promising mid-term results** for patients with patellar instability and high-grade trochlear dysplasia.

- Cartilage preservation (3 to 10 years MRI follow-ups) : 91 % good to fair outcomes

- Functional Outcomes : KOOS, Kujala, IKDC, Lysholm scores remained stable beyond 3 years.

References

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