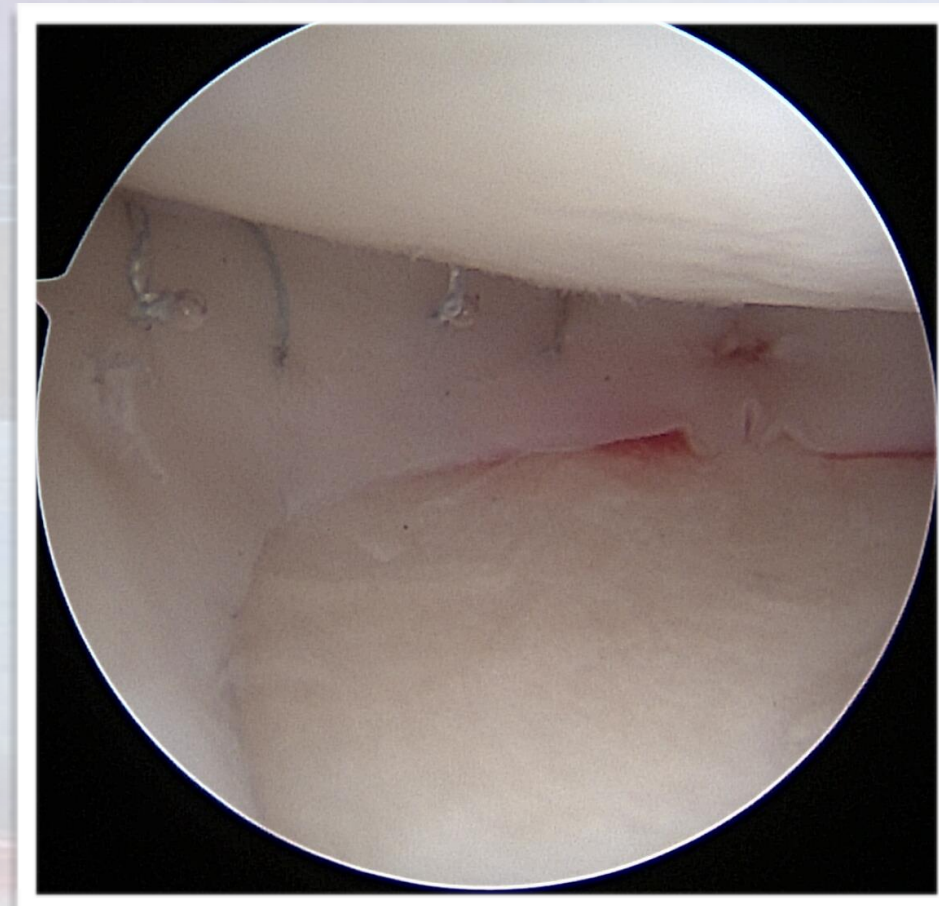


TIME TO ACHIEVING CLINICALLY SIGNIFICANT OUTCOMES AFTER MENISCAL ALLOGRAFT TRANSPLANTATION

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DISCLOSURES

Dr. Brian J Cole

Other from Aesculap, other from NIH, other from Operative Techniques in Sports Medicine, personal fees from Ossio, personal fees and other from Regentis, other from Smith and Nephew, grants, personal fees and other from Arthrex Inc. , other from Elsevier publishing, other from Bandgrip Inc. , other from Acumed LLC, other from Encore Medical, LP, other from GE Healthcare, other from Merck Sharp & Dohme Corporation, other from SportsTek Medical, Inc, other from Vericel Corporation, outside the submitted work.

Dr. Adam B Yanke

Personal fees from CONMED Linvatec, personal fees from JRF Ortho, personal fees from Olympus, grants from Organogenesis, non-financial support and other from Patient IQ, non-financial support from Smith & Nephew, non-financial support from Sparta Biomedical, grants from Vericel, grants from Arthrex, Inc., and Aastrom Bioscience s Inc., outside the submitted work.

Dr. Stephanie E Wong:

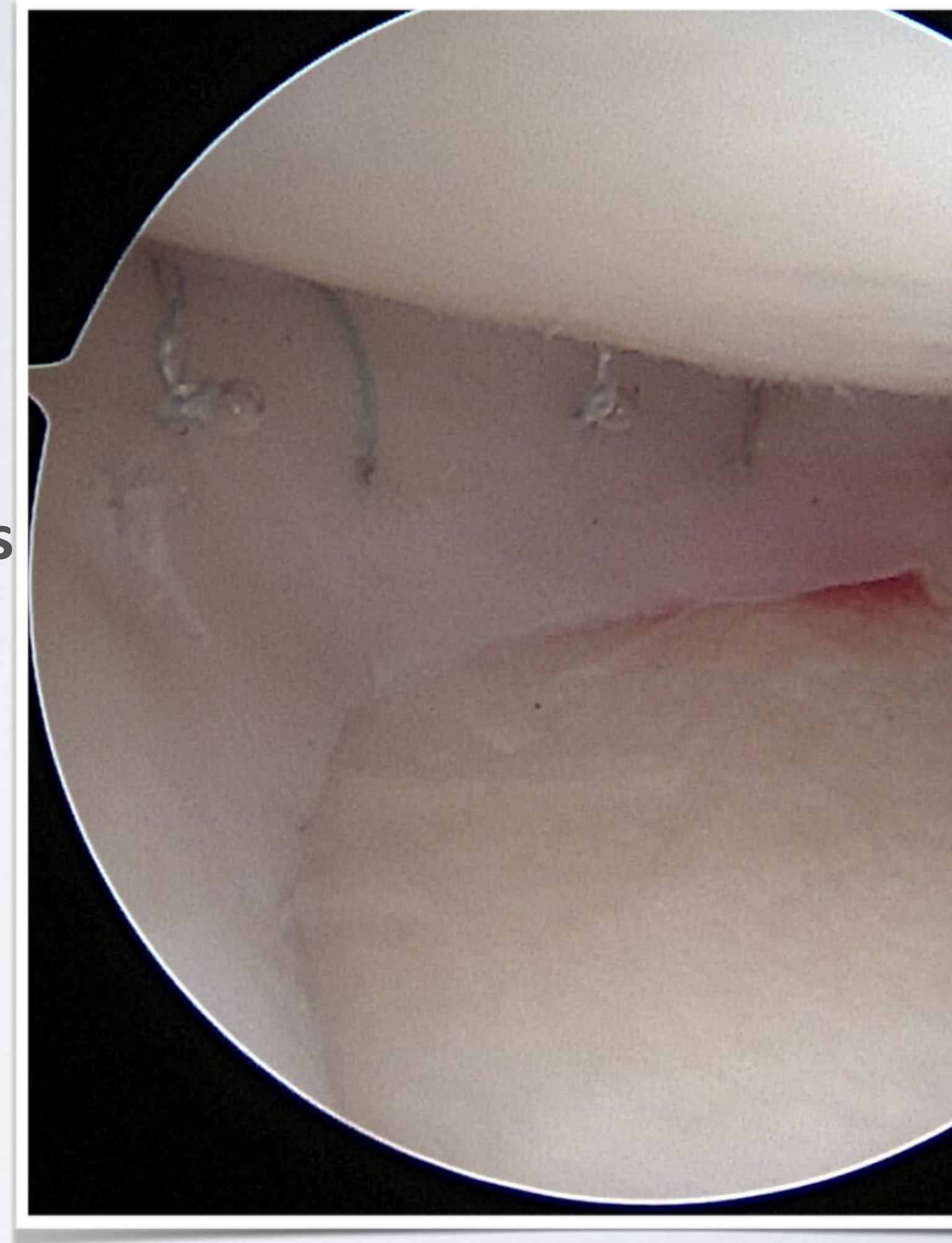
Pain presenter of speaker for DJ Orthopaedics.

Dr. Kevin C Parvaresh:

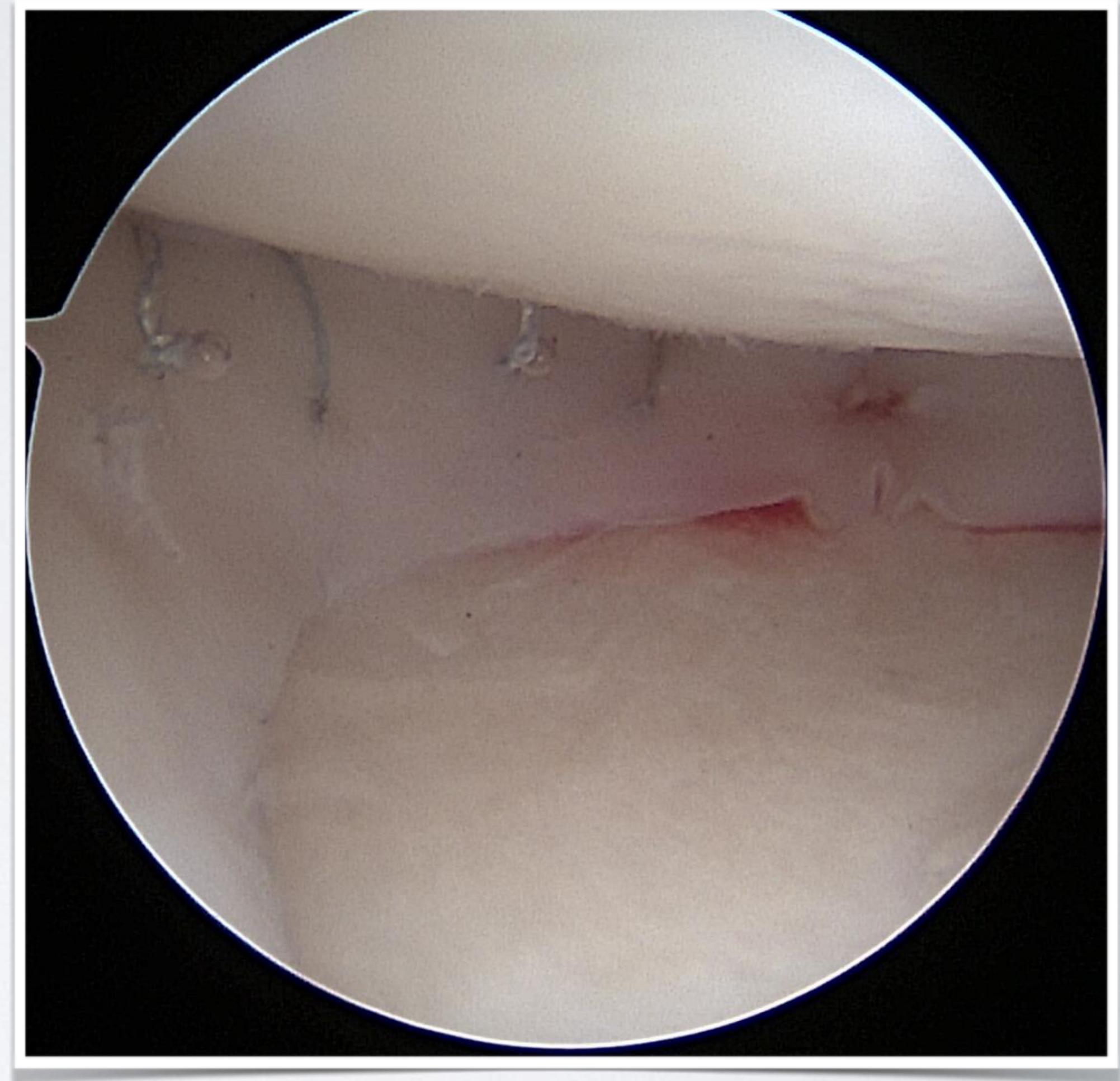
Pain presenter of speaker for DJ Orthopaedics.

INTRODUCTION

- **Meniscal allograft transplantation** (MAT) is a widely utilized procedure for treating patients with unicompartmental pain and meniscal deficiency that has demonstrated **good clinical outcomes** at short and long-term follow-up¹⁻⁵
- Clinical improvement can be determined using **clinically significant outcomes** (CSOs), such as the minimal clinically important difference (MCID) and patient acceptable symptomatic state (PASS)⁶⁻⁷
- While prior studies have defined MCID and PASS for commonly used patient reported outcomes (PROs) after MAT, the purpose of this study was to determine the **time to achieving MCID and PASS** for PROs and to identify any risk factors affecting achievement of CSOs in patients undergoing MAT



Hypothesis: Based on existing literature, we hypothesized that increased body mass index (BMI), work-related claims, and higher baseline PROs would increase the time to achieve MCID and PASS



METHODS

- A prospectively maintained MAT registry was retrospectively reviewed from April 1, 2014 to May 31, 2019
- Inclusion criteria: All patients who underwent MAT regardless of if a concomitant procedure was performed, completed preoperative PROs, and were at least 6 months postoperative were initially included in the study
- Exclusion criteria: Patients who underwent revision MAT or failed within the study period and patients who did not complete preoperative PROs and at least one complete set of postoperative PROs were excluded
- An emphasis was placed on patients who completed their 6-month and 1-year PROs instead of 2-year PROs based on prior literature that demonstrated significant improvements in PROs by 1-year and high achievement rates of CSOs at this this time point⁸

METHODS

- International Knee Documentation Committee (IKDC) and Knee Injury and Osteoarthritis Outcome Scores (KOOS) subscores were administered preoperatively and at 6-months, 1-year, and 2-years postoperatively.
- Each patient had a two-month window (one month prior to and one month after) to complete the PRO.
- Therefore, IKDC and KOOS surveys were available to patients to complete at 5-7, 11-13, and 23-25 months

METHODS

- **Prior MCID and PASS** values defined by Liu et al., for patients who underwent MAT were used⁸
- Previously reported PASS values for KOOS Pain, Symptoms, and Sport did not reach an area under curve (AUC) > 0.70 and thus were not included in analysis
- **Kaplan-Meier survival curve** analysis with interval censoring was used to calculate the cumulative percentages of MCID and PASS achievement at each follow-up time interval
- The **influence of demographic and intraoperative factors** on earlier or delayed achievement of MCID and PASS was investigated using Weibull parametric survival regression analysis for both IKDC and KOOS subscales⁹

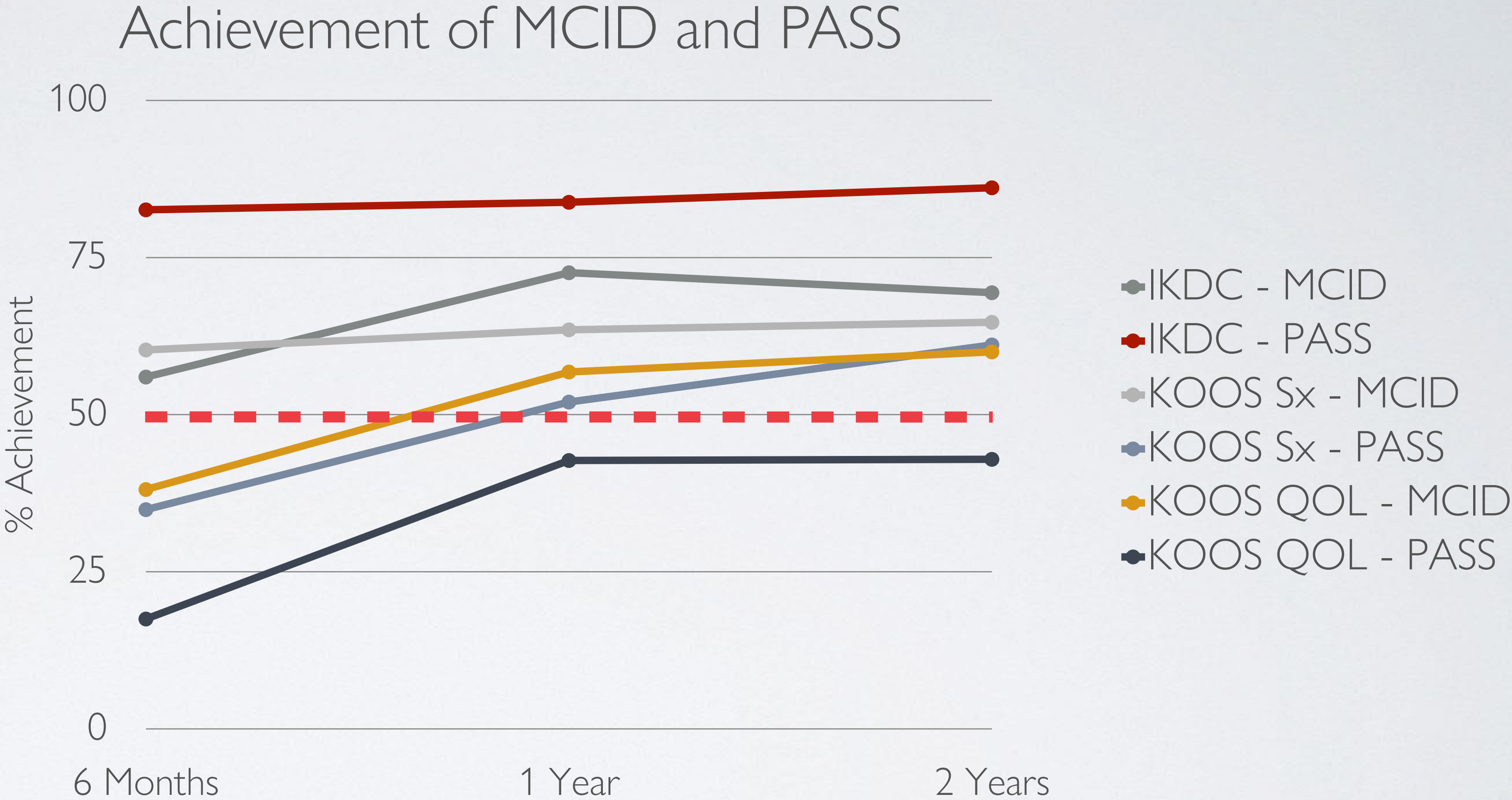
RESULTS

- Eighty patients (mean age: 28.35 ± 9.76 years, M:F 40:40, mean BMI: 27.17 ± 5.34 kg/m²) were included
- A total of 69 patients (86%) completed 6-month PROs and 76 patients (95%) completed 1-year PROs; 46% (n = 37) completed 2-year PROs.

Sex, M/F	40/40
Laterality, R/L	48/32
Age	28.35 ± 9.76
BMI	27.17 ± 5.34
WC	11 (14)
<u>Smoker</u>	
Current	3 (4)
Former	3 (4)
Medial/Lateral MAT	39/41
<u>Number of FCDs</u>	
	0 18 (20)
	1 43 (54)
	2 18 (23)
	3 4 (4)
Isolated MAT	20 (24)
Concomitant ACLR	10 (13)
Concomitant Cartilage Procedure	55 (68)
Concomitant Realignment Procedure	15 (18)

RESULTS

- The majority of patients achieved MCID and PASS at 6-months and 1-year



RESULTS

- The time to MCID ranged from 5.8-8.0 months
- The time to PASS ranged from 5.6-11.3 months

	MCID (Median [IQR])	PASS (Median [IQR])
IKDC	6.0 (5.2–11.2)	5.6 (5.2–7.3)
KOOS Pain	5.8 (5.2–11.4)	NA
KOOS Sx	8.0 (5.4–11.6)	8.0 (5.4–11.8)
KOOS ADL	6.0 (5.3–11.4)	NA
KOOS Sport	6.6 (5.2–11.8)	NA
KOOS QoL	7.5 (5.3–12.1)	11.3 (5.6–12.9)

RESULTS

Factors decreasing time to achieving MCID:

- Concomitant realignment surgery: (KOOS Sports: HR = 2.542)

Factors delaying time to achieving MCID:

- Worker's compensation: (All PROs: HR: = 0.239 - 0.305)
- Greater BMI: (KOOS ADL: HR = 0.946; KOOS Pain: HRL = 0.957)
- The number of focal chondral defects: (KOOS QOL: HR = 0.701 - 0.734)
- Higher preoperative PRO scores: (All PROs: HR = 0.947-0.970)

RESULTS

Factors decreasing time to achieving PASS:

- Higher preoperative PRO scores:
(KOOS Sx: HR = 1.03, KOOS QOL: HR = 1.043)

Factors delaying time to achieving PASS:

- Worker's Compensation status:
(IKDC: HR = 0.188, KOOS Sx: HR = 0.171)
- Greater BMI: (KOOS Sx: HR = 0.925, KOOS QOL: HR = 0.879)

DISCUSSION

- MCID on IKDC and KOOS subscores was achieved between 6 to 8 months postoperatively after a MAT
- Patients undergoing MAT can expect to achieve PASS between 5.6 and 11 months postoperatively
- These ranges are PRO dependent and likely due to the differences in what each PRO is testing. For example, it is not surprising that patients **may experience pain relief prior to noticeable improvement in quality of life**

DISCUSSION

- BMI and WC status were found to significantly delay achievement of MCID and PASS for multiple PROs
- Prior studies have suggested that BMI is associated with inferior outcomes after MAT: Jimenez-Garrido et al., reported that patients with a BMI > 30 kg/m² had significantly lower IKDC scores, on average about 12 points lower, than non-obese patients¹⁰
- Prior literature for other sports medicine procedures has demonstrated that WC status may both decrease the likelihood of CSO achievement and increase the time required to achieve these clinical benchmarks¹¹⁻¹³

DISCUSSION

- Interestingly, we did **not** find that undergoing an isolated MAT decreased time to achieving CSOs and undergoing a MAT with a cartilage procedure did not delay the time to CSO achievement
- This is in line with prior studies that have reported no effect on PROs based on the presence of full-thickness chondral defects^{14,15}

CONCLUSION

- The majority of patients have clinically significant improvements in pain and function after MAT with over 50% of patients experiencing clinically significant improvement within the first postoperative year
- Worker's compensation status and high BMI may prolong time to achievement of MCID and PASS after MAT

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THANK YOU!

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