Reliability of the ROCK Osteochondritis Dissecans Knee Arthroscopy Classification System: A Multi-center Validation Study

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INTRODUCTION

Osteochondritis dissecans (OCD) is a focal, idiopathic alteration of subchondral bone with risk for instability and disruption of adjacent articular cartilage that may result in premature osteoarthritis.

Although arthroscopic staging systems exist for OCD[1-3], none have been tested for intra-observer and inter-observer reliability. Using an expert consensus method, the Research in Osteochondritis of the Knee (ROCK) study group developed an arthroscopy classification system for OCD of the knee.

The purpose of this study was to determine the reliability of this OCD classification system.

METHODS

The ROCK study group developed a classification system for arthroscopic evaluation of OCD of the knee based on the experience of 13 centers experienced in the care of OCD. The classification system produced 6 arthroscopic categories, as depicted in the center panel.

Sample size estimates for raters and subjects were performed *a priori* using the principles described by Giraudeau and Mary[4]. In the setting of 6 categories, 30 representative arthroscopic videos were planned to be evaluated by 10 orthopedic surgeons.

Raters did not participate in the video case selection or preparation. Raters did participate in a training module (including archetypal arthroscopic photos, videos, and line drawings) prior to rating the first round of videos.
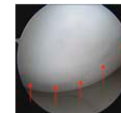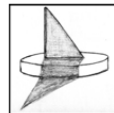
After 4 weeks, the 30 videos were reviewed a second time in a new, randomly selected order. Inter-rater reliability assessment was performed using the intra-class correlation coefficient (ICC)[5].
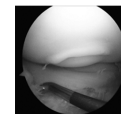
IMMOBILE LESIONS

CUE BALL:
No abnormality detected arthroscopically.
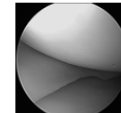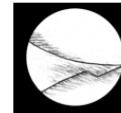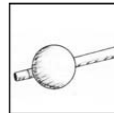
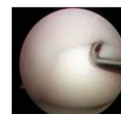**SHADOW:**
Cartilage is intact and subtly Demarcated.

WRINKLE:
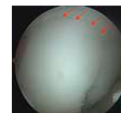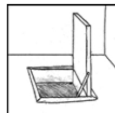Cartilage is demarcated with a fissure, buckle, and/or wrinkle.
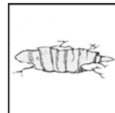

MOBILE LESIONS

LOCKED DOOR:
Cartilage fissuring at periphery, unable to hinge open.

TRAP DOOR:
Cartilage fissuring at periphery, able to hinge open.

CRATER:
Exposed subchondral bone defect.

RESULTS

The inter-observer reliability of this novel arthroscopy classification was estimated by an ICC of 0.94 (95% CI, 0.91 to 0.97) for the first round and 0.95 (95% CI, 0.93 to 0.98) for the second round. According to the standards for the magnitude of the reliability coefficient of Bland and Altman[6], these ICCs are very good.

CONCLUSIONS

The ROCK OCD knee arthroscopy classification system demonstrated very good reliability. Relatively rare conditions will require multi-center study groups to perform high quality outcome studies. This classification system will facilitate multi-center studies for OCD.

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