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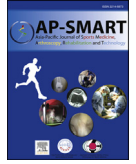


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Original article

# Time interval from initial surgery for torn discoid lateral meniscus to the contralateral knee surgery

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## Abstract

To estimate the long-term possibility of needing surgery on contralateral knees that were asymptomatic at the time of initial discoid lateral menisci (DLM) surgeries, a minimum of 10 years of follow-up was performed after unilateral surgery for a torn DLM. Eligible patients had received arthroscopic meniscectomy between 1986 and 2001 for unilateral torn DLM. Patients with symptomatic contralateral knees at the time of initial surgery were excluded. Among these patients, only those aged no more than 20 years at the time of surgery were included in the study. Ultimately, 30 contralateral knees were followed for an average of 16.6 years after the initial knee surgery. Types of menisci were examined from operative records employing Watanabe's classification. When surgical treatment was necessary on contralateral knee, time interval from initial surgery to the second surgery was recorded. Patients were divided into two groups: those who needed surgical treatment on their contralateral knees (surgery group: S group) and those who did not need surgical treatment on their contralateral knees (non-surgery group: N group). Age at the time of initial surgery, sex, and type of menisci were examined and compared between the two groups. Seven of the 30 knees received arthroscopic surgery during the follow-up period (at an average of 1.6 years after the initial surgery). The rest of the 77% of contralateral knees survived a follow-up period of at least 10 years without requiring surgery. A higher percentage of female patients needed contralateral knee surgeries (30%, 6/20 patients) compared with male patients (10%, 1/10 patients). The possibility for needing surgery on the contralateral knee was highest in the first 2 years and decreased drastically thereafter.

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**Keywords:** Discoid lateral meniscus; Contralateral knee; Meniscectomy; Prognosis

## Introduction

Symptomatic discoid lateral menisci (DLM) often need surgical treatments. DLM are considered to be more vulnerable to injuries compared with normally shaped lateral

menisci,<sup>1–3</sup> but the actual degree of risk for asymptomatic DLM is poorly understood. DLM exist bilaterally in a high percentage of patients and several publications have referred to this bilaterality,<sup>4,5</sup> suggesting that contralateral knees might become symptomatic that require later surgical treatments even when they are asymptomatic at the time of surgery on the symptomatic knee. It is notable that recent long-term clinical follow-up studies usually included some percentage of subjects who had undergone bilateral surgeries.<sup>6–10</sup> However, none of these publications detailed the timing of the surgery on the contralateral knees. To address this, we evaluated the status of contralateral knees by a long-term follow-up study. For that purpose, contralateral knees that were asymptomatic

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at the time of initial DLM surgeries were clinically followed for a minimum of 10 years after unilateral surgery for a torn DLM.

We hypothesized that there should be a specific time range where contralateral knees became symptomatic as to need surgical treatment. By elucidating this timing, we might be able to avoid contralateral knee surgeries by modulating post-operative activities.

## Materials & methods

### Patients

Eligible patients had received arthroscopic meniscectomy between 1986 and 2001 for unilateral torn DLM. We performed surgery when a knee exhibited locking symptoms and extension loss, or when joint effusion or pain upon recreational activities persisted for more than 3 months. In addition, only cases with torn DLM diagnosed by preoperative magnetic resonance imaging (MRI) were considered eligible for arthroscopic surgeries. Subjects included in the present study were those who had torn DLM confirmed by preoperative MRI as well as intraoperative arthroscopic findings. Among these patients, to minimize the degenerative factor of menisci, only patients aged  $\leq 20$  years at the time of surgery were included because degeneration of menisci starts in the thirties.<sup>11</sup> Patients with symptomatic contralateral knees at the time of initial surgery were excluded. A total of 75 DLM surgeries were performed during this period. Three patients received simultaneous bilateral surgeries. Twenty-two patients were over 20 years of age, and six patients had symptoms on their contralateral knee when initial surgeries were performed. Thus, 41 patients met the inclusion criteria, but we could not reach nine patients due to them having moved, and two patients declined to participate in the study. Finally, 30 patients were left for the present study. Twenty patients were female and 10 were male. The average age at the time of initial surgery was 11.9 years (range: 3–19 years). The average follow-up period after surgery was  $16.6 \pm 4.6$  years (range: 10.0–25.1 years).

### Items examined

Time from the occurrence of the symptom to the surgery on the index operated knees was examined. Preoperative activity level employing Tegner's score before initial surgery and highest activity level in life time was examined. When surgical treatment was necessary on contralateral knee, time interval from initial surgery to the second surgery was recorded.

Type of menisci was classified based on operative records according to Watanabe's classification, whereby DLMs were classified as incomplete, complete, and Wrisberg type based on the degree of coverage of the tibial plateau and the presence or absence of the normal posterior attachment.<sup>12</sup>

Patients were divided into two groups: those who needed surgical treatment on their contralateral knees (surgery group:

S group) and those who did not need surgical treatment on their contralateral knees (non-surgery group: N group).

### Statistical analyses

Variables evaluated included sex, age, type of menisci, and the time from the initial surgery to the contralateral surgery.

The Kaplan-Meier method was employed for survival analysis of the contralateral knee, with failure defined as the time when the contralateral operation was performed.

## Results

### Patients' features

As for initial knee surgery, seven patients received surgery within a week due to acute locking symptom. For the other 23 patients, average time from occurrence of symptom to the index surgery was  $12.4 \pm 19.2$  (4–80 months).

Average preoperative Tegner activity score was  $3.7 \pm 0.9$ .

Twenty-one menisci were complete discoid meniscus (CDM), and nine menisci were incomplete discoid meniscus (ICDM). None was classified as Wrisberg type.

### Timing and percentage of contralateral surgery

Seven patients (23.3%) received arthroscopic surgery on the contralateral knee because of a torn DLM. No knees received arthroscopic surgery because of other reasons. The average age at the time of contralateral knee surgery was  $15.4 \pm 4.2$  years (range: 8.3–20.7 years); one patient was over the age of 20 years.

The average time from the initial surgery to contralateral knee surgery was  $1.6 \pm 1.3$  years (range: 0.2 to 4.1 years). Six of the seven contralateral surgeries occurred within 2 years of the initial surgery (Fig. 1).

### Demographic characteristics of the S and N groups

At the time of the initial surgery, the average age of patients who later needed surgical treatment on the contralateral knee (S group,  $n = 7$ ) was  $12.4 \pm 2.3$  years, and that of patients who did not need surgery (N group,  $n = 23$ ) was  $11.7 \pm 4.7$  years (Table 1). A higher percentage of female patients needed contralateral knee surgeries (30%, 6/20 patients) compared

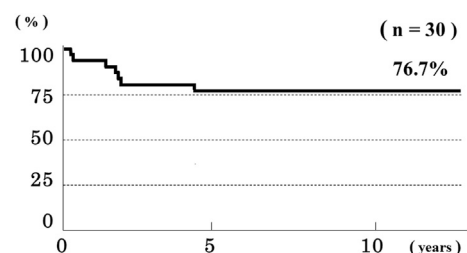


Fig. 1. Survivorship of contralateral knees. Risk of needing surgical treatment for the contralateral knee was high within the first 2 years after the initial surgery. After 2 years, the risk decreased drastically.

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