

Progress and Role of Finger Joint Arthroscopy



Isato Sekiya, MD, PhD^{a,*}, Masaaki Kobayashi, MD, PhD^b, Hideki Okamoto, MD, PhD^b,
Takanobu Otsuka, MD, PhD^b

KEYWORDS

- Finger joint arthroscopy • Metacarpophalangeal joint • Proximal interphalangeal joint
- Distal interphalangeal joint

KEY POINTS

- Arthroscopy of finger joints provides more precise information regarding the status of the intra-articular structures than alternative imaging modalities.
- Because the metacarpophalangeal joint is suitable for arthroscopic surgery, many attempts to treat various conditions, such as arthritis, intra-articular fractures, and ligament injuries, have been reported.
- There are technical limitations in arthroscopy and arthroscopic surgery in the proximal interphalangeal and distal interphalangeal joints, because the joint cavity is very small.
- The arthroscope and instruments should be manipulated gently to avoid iatrogenic cartilage damage and slippage out of the joint.

INTRODUCTION

Arthroscopy is useful for the evaluation and treatment of intra-articular disorders and causes minimal surgical trauma. It is the gold standard for the assessment of articular cartilage, synovium, and ligaments of large joints. Upper extremity arthroscopy has been used mostly in the shoulder, elbow, wrist joints, and carpometacarpal joint of the thumb.

Arthroscopy for finger joints was first described by Chen¹ in 1979, and the standard technique for this method was established. However, few attempts at metacarpophalangeal (MCP), proximal interphalangeal (PIP) and distal interphalangeal (DIP) joint arthroscopy have been made since that time, because it requires a specially designed small arthroscope and instruments. Arthroscopy is not essential for the diagnosis of most finger joint

disorders, and its therapeutic use in finger joint has not yet been established.

This article discusses the role and surgical techniques of finger joint arthroscopy.

INSTRUMENTS

Specially designed small arthroscopes and instruments are necessary for arthroscopic surgery in finger joints because the joint cavity is very small.

Small Joint Arthroscope

A review of the literature reveals reports using various sizes and types of arthroscopes. Arthroscopes 1.9 mm in diameter are most commonly used,^{2–17} although others with diameters of 1.7,^{18,19} 2.0,²⁰ 2.2,²¹ 2.3,²² and 2.5 mm²³ have also been reported. There were 2 reports using a

Conflicts of Interest: The authors declare no conflicts of interest in association with this article.

^a Department of Orthopaedic Surgery, Kainan Hospital, The Aichi Prefectural Federation of Agricultural Cooperative for Health and Welfare, 396, Minamihonden, Maegasu-cho, Yatomi, Aichi 498-8502, Japan;

^b Department of Orthopaedic Surgery, Graduate School of Medical Sciences, Nagoya City University, 1 Kawasumi, Mizuho-cho, Mizuho-ku, Nagoya 467-8601, Japan

* Corresponding author.

E-mail address: i_sekiya@yahoo.co.jp

Hand Clin 33 (2017) 819–829

<http://dx.doi.org/10.1016/j.hcl.2017.07.018>

0749-0712/17/© 2017 Elsevier Inc. All rights reserved.

1.0-mm needle arthroscope for biopsy and staging procedures.^{4,24} The authors use a 1.5-mm arthroscope at our facility (Fig. 1).^{25,26}

Shaver System

The 2.0-mm shaver cutter^{2,5,7,9,12-14,17-19,27} has been used most often, although others with diameters of 1.9,²⁰ 2.5,^{22,23} 2.9,³ and 3.0 mm¹⁸ have also been used. The authors use a shaver system with a 2.5-mm full-radius cutter for synovectomy at our facility (see Fig. 1).^{25,26}

Grasping Forceps

Although synovial biopsy samples are obtained with a grasping forceps,^{2,4,6,15,24} there were no reports describing the details of grasping forceps. The authors have been using miniforceps for biopsies and the removal of foreign bodies at our facility (see Fig. 1).^{25,26}

Radiofrequency Probes

For the treatment of shoulder instability, thermal shrinkage is commonly used. Although the authors have no experience with using radiofrequency probes in finger joints, there have been several reports using radiofrequency probes for synovectomy and thermal shrinkage of the MCP joint capsule.^{8-10,12-14,17}

Traction Apparatus

In the early reports, no articles mentioned any finger traction apparatus, and the hand and arm were placed on the operating table horizontally.^{1,18,20} Traction with a Chinese finger trap was first described by Declercq and colleagues² in 1994. The hand was hung up in a finger trap, with the weight of the hand and arm alone providing sufficient traction. Ryu and Fagan¹⁹

also reported that a wrist tower and finger trap were used to suspend the hand vertically, with the weight of the arm serving as traction. A finger trap made of plastic is preferred to one of metal for maximizing the patient's comfort.

Traction tension applied per digit was first mentioned in 1999.^{3,22,23} Recently, there have been many reports of the affected digit being suspended with a finger trap using a traction device with 2.3 to 5.5 kg (5-12 lb) of tension: 2.3 kg (5 lb),^{7,23} 2.3 to 3.6 kg (5-8 lb),²⁷ 2.3 to 4.5 kg (5-10 lb),¹¹ 2.5 to 4.5 kg (5.5-10 lb),¹³ 3.6 kg (8 lb),³ 3.6 to 5.5 kg (8-12 lb),²² 4.5 kg (10 lb),¹⁰ and 5.0 kg (11 lb).¹⁷

When finger traps provide poor traction, Slade and Gutow²² advocate the placement of a transfixing Kirschner wire through the phalanx to secure the finger trap to the finger. For this technique, after the finger trap is applied, a single 0.9-mm (0.035-inch) Kirschner wire is drilled through the phalanx under radiographic guidance.

Fluid Management System

Berner¹⁰ described a fluid management system in which an arthroscopic fluid pump is used to facilitate fluid management, provided a low-pressure setting is used. However, he has not found this necessary, because the volume of the joint is small, and a pressure bag system using a 1-L bag of saline solution at 100 mm Hg has proved adequate. The authors have no experience in using a fluid management system, and continuous injection by an assistant is sufficient to obtain good visualization when needed.

GENERAL TECHNIQUE

Anesthesia

Although regional or general anesthesia has been reported often in such procedures, there seems to be no strong reason to perform anesthesia instead of a digital block. Although a tourniquet applied either to the upper arm or on the digit should be used in most cases, all procedures can be performed on an outpatient basis under axillary block, wrist block, digital block, or local anesthesia.

Portals

For MCP, PIP, and DIP joints, the portals from both the radial and ulnar side to the central extensor tendon were established by Chen.¹ Two dorsal portals were developed for each joint (Fig. 2). The dorsal joint line is located by palpation for all joints, and by inspection of 2 depressions



Fig. 1. Instruments for small joint arthroscopy and arthroscopic surgery. From left to right: arthroscope, arthroscope sheath, semiblunt and blunt trocars, shaver cutter, and grasping forceps.

Download English Version:

<https://daneshyari.com/en/article/5708076>

Download Persian Version:

<https://daneshyari.com/article/5708076>

[Daneshyari.com](https://daneshyari.com)