Education in wrist arthroscopy
Obdeijn, Miryam

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Chapter 2

Trends in wrist arthroscopy

Miryam C. Obdeijn, Gabrielle J.M. Tuijthof, Chantal M.A.M. van der Horst, Christophe A. Mathoulin, Philippe L. Liverneaux

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ABSTRACT

Background
Wrist arthroscopy plays a role both in the diagnosis and the treatment of wrist pathology. It has evolved in the last three decades.

Questions
The present status of wrist arthroscopy was investigated by answering the following questions:
- What is its current position in the treatment wrist pathologies according to the literature?
- What is its current position according to hand surgeons?

Methods
Analysis of the number of publications on wrist arthroscopy was performed and compared to the number of publications on other arthroscopy topics to assess the current position of wrist arthroscopy. The members of the EWAS (European Wrist Arthroscopy Society) and the members of eight National Hand Surgery Societies were questioned on wrist arthroscopy in daily practice.

Results
From 1975 till now, 894 papers on wrist arthroscopy were found, compared to 9132 papers on knee arthroscopy. The publications on wrist arthroscopy increased from an average of 8/year (1986) to 26/year (2012). More than half (56.9%) of the responders of the EWAS perform fewer than 5 wrist arthroscopies per month and only 7 (10.8%) indicate the performance of more than 10 wrist arthroscopies per month. Seventy-four percent of the orthopaedic hand surgeons perform wrist arthroscopy (in 48.5% for therapeutic indications) against 36.8% of plastic surgery hand surgeons (in 23.1% for therapeutic indications).

Conclusion
Wrist arthroscopy has taken up a place in the armamentarium of the hand surgeon. The place of wrist arthroscopy in the daily practise is related to the background of the hand surgeon.
INTRODUCTION

Wrist arthroscopy plays an important role in the diagnosis and treatment of many wrist pathologies. On the time-line of medical interventions, wrist arthroscopy has only earned its place in the last three decades. It has followed the developments of laparoscopic techniques, starting out of curiosity to inspect the inside of the human body, given the lack of other means to do so, and trying to find explanations for different ailments (1). The instruments developed for cystoscopy and laparoscopy were subsequently used to inspect joints. With the development of smaller instruments and better visualization techniques, this minimally invasive surgery became more accepted as a way to diagnose ailments of the joint.

The move from knee to wrist arthroscopy is not clear from the literature. Certainly Takagi started with arthroscopy in the knee because of the important clinical problem he was faced with: the tuberculosis of the knee that prevented patients from sitting on their knees, causing an important social handicap (2). Probably with the development of smaller instruments and better lighting by Watanabe, the indications were expanded to shoulder, ankle and later wrist arthroscopy.

We can only guess at the reason why wrist arthroscopy was developed later than arthroscopy of other joints. In our view, it is probably due to the complicated features of the wrist:
- It is a narrow, small joint.
- It has a convexity in both the radio-ulnar direction and the dorsal-volar direction.
- It has a complex intra-articular anatomy.
- There are many structures at risk when introducing the portals.
De Smet also describes this in his paper: “The particularity of the wrist with respect to arthroscopy is its small size, the complexity of the patient(s) and the proximity of tendons and nerves to the standard portals” (3).

In his paper, published in 2008, Bain considers wrist arthroscopy as the gold standard in the diagnosis and treatment of a variety of conditions. He foresees that the clinical applications will continue to expand, with more complex reparative, reconstructive and salvage procedures being performed arthroscopically (4). However, although its field has been expanding over the last decades, its role in either diagnosis or treatment of wrist ailments is subject to discussion.

This paper summarizes what is known about the position of wrist arthroscopy according to the literature, and combines this information with information gathered from surveys.
among hand surgeons to present the current status of wrist arthroscopy in the daily practice of hand surgeons.

In order to get a complete perspective of wrist arthroscopy from its past to its present status, answers to the following questions were sought:

- What is the current position of wrist arthroscopy in the surgery of wrist pathologies according to the literature?
- What is the current position of wrist arthroscopy according to hand surgeons?

**MATERIALS AND METHODS**

To assess the current position of wrist arthroscopy, we started by looking at the number of publications in this field. We searched Pubmed using the search terms: ‘wrist’ and ‘arthroscopy’. The total number of papers per period of five years was noted, and for reference these numbers were compared with the number of papers on knee arthroscopy. Furthermore, we looked for the current indications for and limitations of wrist arthroscopy in the field of wrist surgery. Thus a second literature search was performed in Pubmed with the search terms: ‘wrist arthroscopy’, ‘indications’, ‘limitations’, ‘complications’, ‘MRI’ and ‘CT’. Only general articles and reviews were included; reports on specific techniques were excluded.

Lastly, to determine the current position of wrist arthroscopy in the daily practice of hand surgeons in different parts of the world, a questionnaire survey was conducted among the members of the EWAS (European Wrist Arthroscopy Society) and the members of eight different National Hand Surgery Societies (the Netherlands, France, Belgium, Germany, Spain, Italy, Japan and Australia).

The first survey, which was conducted among the members of the EWAS, consisted of two sets of questions: the first set related to the surgeons’ background and experience in wrist arthroscopy, and the second set aimed at assessing the place of wrist arthroscopy in their clinical practice (Table 1). The survey was undertaken as an electronic survey (Google Doc) composed of open and multiple-choice questions. Twice a reminder was sent to all participants to complete the questionnaire.

To retrieve more general information, a second questionnaire survey was conducted relating to the background of hand surgeons, and their use of wrist arthroscopy in daily practice (Table 2). This survey involved members of nine different National Hand Surgery Societies.
### Table 1: Questions of the survey send to the EWAS members

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your background in hand surgery?</td>
<td>Orthopaedic surgery, Plastic surgery, Hand surgery, Other</td>
</tr>
<tr>
<td>How many years of experience in hand surgery do you have?</td>
<td>Open question Please give answer in years</td>
</tr>
<tr>
<td>How many years of experience in wrist arthroscopy do you have?</td>
<td>Open question Please give answer in years</td>
</tr>
<tr>
<td>How many wrist arthroscopies do you perform a month?</td>
<td>Open question</td>
</tr>
<tr>
<td>How many of those are diagnostic wrist arthroscopies?</td>
<td>Open question Diagnosic arthroscopies = inspection of cartilage and ligaments (only introduction of scope and hook)</td>
</tr>
<tr>
<td>How many of those are interventions?</td>
<td>Open question Intervention = every intervention, such as biopsy, shaving, VAP, TFCC reinsertion ect</td>
</tr>
<tr>
<td>What do you consider to be the place of wrist arthroscopy in the diagnostics of wrist pathology?</td>
<td>First choice, Only necessary if you can't find the diagnosis with radiology, Never</td>
</tr>
<tr>
<td>What do you consider to be the place of wrist arthroscopy in the treatment of wrist pathology?</td>
<td>First choice, Only for specific indications</td>
</tr>
<tr>
<td>How many wrist arthroscopies do you think a hand surgeon should have performed to qualify him/her as expert in wrist arthroscopy?</td>
<td>Open question</td>
</tr>
<tr>
<td>How many wrist arthroscopies do you think a hand surgeon should perform each year to keep his/her expert level?</td>
<td>Open question</td>
</tr>
</tbody>
</table>

### Table 2: Questions of the survey to the members of the National Hand Surgery Societies

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your background for hand surgery?</td>
<td>Orthopaedic surgery, Plastic surgery, General surgery, Trauma surgery, Other</td>
</tr>
<tr>
<td>Do you perform wrist arthroscopies?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>If you perform wrist arthroscopies, how many wrist arthroscopies do you perform a month?</td>
<td>&lt; 5, 5 – 10, &gt; 10</td>
</tr>
<tr>
<td>If you perform wrist arthroscopies, what is the main objective of the wrist arthroscopy?</td>
<td>Diagnostic, Therapeutic, 50-50 Diag-Ther</td>
</tr>
</tbody>
</table>
RESULTS

What is the current position of wrist arthroscopy in the surgery of wrist pathologies according to the literature?

Before 1975 there are no references in Pubmed that can be identified using the search terms ‘wrist’ AND ‘arthroscopy’. In total there are 894 papers to be found in Pubmed on wrist arthroscopy, with a steady increase in numbers from 1986 up to now (Figure 1). In comparison, in the same period there are 9,132 papers on knee arthroscopy.

The results of the second search looking for the indications for and limitations of wrist arthroscopy are presented in Figure 2, showing the total number of papers and the number of reviews (in brackets) on the subject.

The literature clearly shows that there are two major uses of wrist arthroscopy: as a diagnostic tool and as a therapeutic tool.

As a diagnostic tool, wrist arthroscopy has its place next to MRI and CT scans. With the improvement of radiological techniques, numerous papers have compared the diagnostic results of arthroscopy with those of CT and MRI scanning. The results for papers comparing the efficacy of MRI, MR arthrograms and CT scans for the diagnosis of TFCC tears or intrinsic ligament tears can be found in Table 3. All authors compared the MRI results with the findings during wrist arthroscopy, which they consider to be the gold standard (5-12). Mahmood et al. conclude in their paper on the value of wrist arthroscopy versus

Figure 1: Papers on wrist arthroscopy found in Pubmed with search terms [Wrist AND Arthroscopy] per period of 5 years
MRI arthrograms that although the sensitivity and specificity of the MR arthrogram is high, wrist arthroscopy offers the advantage of being both diagnostic and therapeutic (5). Bille et al. state in their paper that wrist arthroscopy is the accepted reference standard for evaluating ligamentous and cartilaginous injuries of the wrist, but that it entails all the risks of surgery (6).

**Table 3:** Papers on the sensitivity and specificity of MRI and CT scan for the diagnosis of wrist pathology

<table>
<thead>
<tr>
<th>Authors</th>
<th>Modality</th>
<th>Tissue</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magee et al</td>
<td>MRI (3-T)</td>
<td>TFCC</td>
<td>86</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SL</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Haims et al</td>
<td>MRI (conv)</td>
<td>TFCC peripheral</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Smith</td>
<td>MRI (3-T)</td>
<td>SL</td>
<td>86</td>
<td>100</td>
</tr>
<tr>
<td>Zlatkin</td>
<td>MRI (3-T)</td>
<td>TFCC</td>
<td>89*</td>
<td></td>
</tr>
<tr>
<td>Potter</td>
<td>MRI (3-T)</td>
<td>TFCC</td>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>Mahmood et al</td>
<td>MR arthro</td>
<td>TFCC</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SL</td>
<td>91</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LT</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Billie et al</td>
<td>CT arthro</td>
<td>TFCC central</td>
<td>88</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TFCC peripheral</td>
<td>30</td>
<td>94</td>
</tr>
</tbody>
</table>

* accuracy instead of sensitivity  
Conv = conventional MRI  
Arthro = MRI or CT scan with intra-articular contrast
Besides the diagnostic indications for wrist arthroscopy, there are many procedures that can be performed arthroscopically in the wrist. In 2006 Mathoulin and Massarella published a paper in which they describe the therapeutic indications for 1,000 wrist arthroscopies (Table 4) (13). In this series only 4% of the arthroscopies were purely diagnostic.

<table>
<thead>
<tr>
<th>Table 4: Indications for wrist arthroscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthroscopic assistance for fracture treatment</td>
</tr>
<tr>
<td>TFCC tears</td>
</tr>
<tr>
<td>Resection of wrist ganglia</td>
</tr>
<tr>
<td>Treatment if intrinsic ligament tears</td>
</tr>
<tr>
<td>Ectomy (radial styloid, wafer, carpal boss)</td>
</tr>
<tr>
<td>Partial prosthesis</td>
</tr>
<tr>
<td>Other techniques</td>
</tr>
</tbody>
</table>

Source: Mathoulin and Massarella (13)

Leclercq performed a survey in 2007 that showed a shift from diagnostic to therapeutic arthroscopies with increase of experience. Among the surgeons who had performed more than 600 wrist arthroscopies, 13% were diagnostic and 87% therapeutic, whereas among the surgeons who had performed fewer than 100 wrist arthroscopies, the rate was 35% diagnostic and 65% therapeutic (www.wristarthroscopy.eu). Thus hand surgeons who begin performing wrist arthroscopies, usually later in their hand surgery careers, start off with diagnostic arthroscopies. When they feel at ease in the wrist, they shift from diagnostic to therapeutic arthroscopies.

**What is the current position of wrist arthroscopy according to hand surgeons?**

The rate of response to the first survey sent to the members of the EWAS was 35% after two reminders (65 out of 185).

**Background of the surgeons:**

Approximately half of the responders (30 out of 65) had a background in orthopaedic surgery. A smaller group (23 out of 65) were plastic surgeons and only a minority (11 out of 65) had a background solely in hand surgery. The majority (51 out of 65) had between 5 and 15 years of experience in hand surgery, but most of these (49 out of 65) had less than 10 years’ experience in wrist arthroscopy, indicating that this is expertise that is often acquired later in the surgical experience (Table 5).
Table 5: Summary of the EWAS member survey results

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background in hand surgery</td>
<td>Orthopaedic</td>
<td>30</td>
<td>46.9%</td>
</tr>
<tr>
<td></td>
<td>Plastic</td>
<td>23</td>
<td>35.9%</td>
</tr>
<tr>
<td></td>
<td>Hand</td>
<td>11</td>
<td>17.2%</td>
</tr>
<tr>
<td>Years of experience in hand surgery</td>
<td>&lt; 5 years</td>
<td>14</td>
<td>21.5%</td>
</tr>
<tr>
<td></td>
<td>6-10 years</td>
<td>19</td>
<td>29.7%</td>
</tr>
<tr>
<td></td>
<td>11-15 years</td>
<td>18</td>
<td>28.1%</td>
</tr>
<tr>
<td></td>
<td>&gt; 16 years</td>
<td>14</td>
<td>21.5%</td>
</tr>
<tr>
<td>Years of experience in wrist arthroscopy</td>
<td>&lt; 5 years</td>
<td>32</td>
<td>49.2%</td>
</tr>
<tr>
<td></td>
<td>6-10 years</td>
<td>17</td>
<td>26.1%</td>
</tr>
<tr>
<td></td>
<td>11-15 years</td>
<td>7</td>
<td>10.8%</td>
</tr>
<tr>
<td></td>
<td>&gt; 16 years</td>
<td>9</td>
<td>13.8%</td>
</tr>
<tr>
<td>Number of wrist arthroscopies performed per month</td>
<td>None</td>
<td>3</td>
<td>4.6%</td>
</tr>
<tr>
<td></td>
<td>&lt; 5</td>
<td>37</td>
<td>56.9%</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
<td>17</td>
<td>26.1%</td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>2</td>
<td>3.1%</td>
</tr>
<tr>
<td></td>
<td>&gt; 15</td>
<td>5</td>
<td>7.7%</td>
</tr>
<tr>
<td>Number of wrist arthroscopies to qualify as expert</td>
<td>&lt; 50</td>
<td>14</td>
<td>21.5%</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>19</td>
<td>29.2%</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>19</td>
<td>29.2%</td>
</tr>
<tr>
<td></td>
<td>&gt; 100</td>
<td>9</td>
<td>13.8%</td>
</tr>
<tr>
<td></td>
<td>?</td>
<td>4</td>
<td>6.1%</td>
</tr>
<tr>
<td>Number of wrist arthroscopies per year to keep expert level</td>
<td>&lt; 25</td>
<td>26</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>25-50</td>
<td>28</td>
<td>43.1%</td>
</tr>
<tr>
<td></td>
<td>60-100</td>
<td>8</td>
<td>12.3%</td>
</tr>
<tr>
<td></td>
<td>?</td>
<td>3</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

More than half of the responders perform fewer than five wrist arthroscopies per month and only seven indicated that they perform more than ten wrist arthroscopies per month (Table 5).

When asked about the indications of the wrist, a minority considers wrist arthroscopy as a first choice for diagnostic purposes, and most consider it as either an adjunct to radiology or that there is never an indication for an arthroscopy purely for diagnostic reasons. Individual remarks about diagnostic and therapeutic indications for wrist arthroscopy can be found in table 6. For therapeutic wrist arthroscopy the majority of responders
feel it is useful for specific indications. Most often mentioned are TFCC lesions and ulnar-sided wrist pain (Table 6).

We asked the participants how many wrist arthroscopies someone should perform before calling himself or herself an expert in wrist arthroscopy. Seventy-eight percent of the responders considered that more then 50 arthroscopies should be performed before one could be regarded as an expert in this field. The number of arthroscopies that should be performed per year to keep up an expert level varied between <25 (26 responders), and more then 60 (8 responders) (Table 5).

The results of the national surveys can be found in table 7. If we leave out the results of the Dutch hand surgeons where the percentage of hand surgeons performing wrist arthroscopy is only 15.4%, a majority (72.6%) of the hand surgeons in these countries perform wrist arthroscopies. This percentage is higher among hand surgeons with an orthopaedic background (74.7%) compared to those with a plastic surgery background.
### Table 7: Summary of survey responses from national Hand Surgery Society members

<table>
<thead>
<tr>
<th>Nation</th>
<th>Orthopedic surgeon</th>
<th>Plastic surgeon</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wrist arthroscopy</td>
<td>Wrist arthroscopy</td>
<td>Wrist arthroscopy</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Members: 154</td>
<td>Responses: 117</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diag 0</td>
<td>Diag 11</td>
<td>Diag 0</td>
</tr>
<tr>
<td></td>
<td>50/50 1</td>
<td>50/50 4</td>
<td>50/50 0</td>
</tr>
<tr>
<td>France</td>
<td>52</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Members: 450</td>
<td>Responses: 85</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diag 9</td>
<td>Diag 7</td>
<td>Diag 1</td>
</tr>
<tr>
<td></td>
<td>50/50 0</td>
<td>50/50 0</td>
<td>50/50 0</td>
</tr>
<tr>
<td>Belgium</td>
<td>13</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Members: 16</td>
<td>Responses: 16</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diag 2</td>
<td>Diag 0</td>
<td>Diag 0</td>
</tr>
<tr>
<td></td>
<td>50/50 5</td>
<td>50/50 0</td>
<td>50/50 0</td>
</tr>
<tr>
<td>Germany</td>
<td>4</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Members: 74</td>
<td>Responses: 74</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diag 0</td>
<td>Diag 4</td>
<td>Diag 4</td>
</tr>
<tr>
<td></td>
<td>50/50 1</td>
<td>50/50 15</td>
<td>50/50 17</td>
</tr>
<tr>
<td>Italy</td>
<td>36</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td>Members: 71</td>
<td>Responses: 71</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diag 8</td>
<td>Diag 0</td>
<td>Diag 0</td>
</tr>
<tr>
<td></td>
<td>50/50 13</td>
<td>50/50 0</td>
<td>50/50 0</td>
</tr>
<tr>
<td>Australia</td>
<td>23</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Members: 36</td>
<td>Responses: 36</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diag 0</td>
<td>Diag 4</td>
<td>Diag 0</td>
</tr>
<tr>
<td></td>
<td>50/50 8</td>
<td>50/50 2</td>
<td>50/50 0</td>
</tr>
<tr>
<td>Spain</td>
<td>32</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Members: 42</td>
<td>Responses: 36</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diag 4</td>
<td>Diag 0</td>
<td>Diag 0</td>
</tr>
<tr>
<td></td>
<td>50/50 17</td>
<td>50/50 0</td>
<td>50/50 3</td>
</tr>
</tbody>
</table>
Chapter 2

Also orthopaedic hand surgeons perform more therapeutic wrist arthroscopies than their colleagues with a plastic surgery background (48.5% against 23.1%).

**DISCUSSION**

On the time-line of endoscopic developments, wrist arthroscopy is one of the more recent interventions. Currently, wrist arthroscopy is an established technique and there is a growing interest in this subject. The increasing number of papers on wrist arthroscopy reflects this. However, the number of papers is still significantly lower than those on knee arthroscopy. As stated above, this could be related to the fact that wrist arthroscopy is more complicated than knee arthroscopy. However, the total number of publications in Pubmed on wrist surgery is also almost 4 times lower than those on knee surgery (12,156 vs 46,171), and 2 times lower than those on shoulder surgery (20,798 vs 12,156). Although humans have two knees, two shoulders and two wrists, the scientific output about wrist surgery is lower.

Besides the publication rate, the growing number of members of wrist arthroscopy societies like the EWAS is indicative of an increasing interest in this subject. In 2009 there were 185 members, whereas now there are more than 500 members. The same goes for the Association of Arthroscopy of North America with an increase from 70 (1975) to 1,553 (1999)(1).

Furthermore, more wrist arthroscopy courses are being held every year. On the website of the EWAS alone there are already 8 announcements of wrist arthroscopy courses.

---

**Table 7 Continued**

<table>
<thead>
<tr>
<th>Nation</th>
<th>Orthopedic surgeon</th>
<th>Plastic surgeon</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wrist arthroscopy</td>
<td>N</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
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Not only is the general interest in wrist arthroscopy increasing, but the place of wrist arthroscopy in the toolbox of the hand surgeon is also shifting. In times when radiologic tools were not available for imaging of tissues, arthroscopy emerged as a means to visualize and inspect the interior of the body (1). This possibility to inspect the inside of the joint has given us a better understanding of the internal wrist anatomy. Ritt describes an interesting paradox: “The tunnel vision of wrist arthroscopy has expanded our view of the wrist” (14).

Arthroscopy of the wrist in its early years was thus mainly diagnostic. But when it is used as a diagnostic tool there are also limitations, as McGinthy stated: “Arthroscopy is an operative technique that requires certain motor skills. However, it is not a substitute for careful and complete physical examination and imaging studies”. Furthermore, not every identifiable pathology on arthroscopy is symptomatic or correlated to clinical findings (15).

As with most new modalities, once a technique is put in place, the users will try to expand its boundaries and usefulness. Sennwald, in 2001, expressed his concern that perhaps some people are now considering arthroscopy as the panacea for many of the diagnostic troubles we encountered in the past and as a ‘mer a boire’ of new possibilities for minimally invasive interventions (16).

As the radiologic imaging tools improved (development of the CT, the MRI, the MR arthrogram), the position of the diagnostic wrist arthroscopy had to be redefined. MRI and CT scans offer the advantage of being non-invasive, but arthroscopy offers the possibility to treat the found lesion concurrently.

In this literature study we chose to focus on indications and the position of wrist arthroscopy in the diagnosis of wrist pathology. Subjects such as complications and new arthroscopic interventions were left out but are equally interesting to study.

The current position of wrist arthroscopy according to hand surgeons was assessed using a survey. This survey among hand surgeons from different countries shows that between 70 and 96 % of hand surgeons perform wrist arthroscopy. The only exception is the Netherlands with only 15% of the members performing wrist arthroscopy. In our view there could be two explanations for this deviating result. First of all, the rate of response to this survey was low (35%), which is not unusual for an electronic survey. This could introduce a bias because perhaps the members who do perform arthroscopies felt that this survey addressed them specifically and were more inclined to respond. The Netherlands survey is the only one with a high response rate, thus reflecting more ad-
equately the ratio within the professional society. The second explanation could be that the Netherlands Society has a very low number of orthopaedic members, most members being plastic surgeons. Hand surgeons who initially had an orthopaedic training are accustomed to exploring joints with a scope and the move from knee and shoulder arthroscopy to wrist arthroscopy is probably just a small side-step as they have already acquired the basic arthroscopic skills such as hand-eye coordination and triangulation skills. Plastic surgeons, however, only use open surgical techniques and thus they have to acquire new skills to be able to perform wrist arthroscopy.

If we leave out the results from the Netherlands, on average 72.7% of the hand surgeons perform wrist arthroscopy and 81.7% have a background in orthopaedic surgery.

The responders to the survey consider the learning curve to be a gentle slope, the majority indicating that a surgeon should have done more than 50 wrist arthroscopies before he or she can call himself or herself an expert. The skill should also be sustained by doing a minimum of 20-30 arthroscopies/year. Sixteen responders even consider a minimum 50 arthroscopies/year a requirement for keeping an expert level.

The survey was sent to members of eight national societies and is thus a sample of the worldwide hand surgery population. In the future it would be interesting to repeat the survey to show changes over a period of years, and to include more national societies from all over the world.

In conclusion, wrist arthroscopy seems to be only at the beginning of its curve towards integration in the daily practice of the hand surgeon. It emerged after the development of arthroscopy techniques for larger joints such as the knee and shoulder.

The vast majority of hand surgeons worldwide use wrist arthroscopy in their daily practice and the advent of new societies and wrist arthroscopy courses shows a growing interest in wrist arthroscopy among hand surgeons, as does the number of publications in this field.

Its place as a diagnostic and therapeutic tool will not be a static but rather a dynamic one, shifting in relation to the further development of imaging tools and the development of new arthroscopic interventions.

Most authors of papers on wrist arthroscopy and most respondents to the surveys do agree, however, that it is a skill with a long learning curve. It is certainly a tool that has taken up a place in the armamentarium of the hand surgeon but whether it will become a gold standard like the knee arthroscopy in orthopaedic surgery remains to be seen.
In summary, the literature search shows a steady increase of publications on wrist arthroscopy. Both the increase in the number of papers and the increase of wrist arthroscopy societies and their number of members indicate a growing interest in this subject. The place of wrist arthroscopy in the daily practise is related to the background of the hand surgeon.
REFERENCES: