

Surgical Management of the Rheumatoid Hand: Consensus and Controversy Among Rheumatologists and Hand Surgeons

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ABSTRACT. *Objective.* Rheumatoid arthritis (RA) is a common cause of debilitating hand deformities, but management of these deformities is controversial, characterized by large variations in the surgical rates of common RA hand procedures. We conducted a national survey evaluating potential differences in physicians' management of RA hand deformities.

Methods. We mailed a survey instrument to a random national sample of 500 rheumatologists and 500 hand surgeons in the US. We evaluated physicians' attitudes toward the other specialties' management of common RA hand deformities and toward the indications for performing rheumatoid hand surgery.

Results. We found 70% of rheumatologists consider hand surgeons deficient in understanding the medical options available for RA, while 73.6% of surgeons believe rheumatologists have insufficient knowledge of the surgical options for RA hand diseases. However, 66.9% of surgeons and 79.5% of rheumatologists had no exposure to the other specialty during training. The 2 physician groups disagree significantly on the indications for commonly performed RA hand procedures such as metacarpophalangeal joint arthroplasty ($p < 0.001$), small joint synovectomy ($p < 0.001$), and distal ulna resection ($p = 0.001$). When physicians do not agree with others' management of RA hand deformities, only 62.4% of surgeons and 61.9% of rheumatologists relay their concern to the other specialty.

Conclusion. Rheumatologists and hand surgeons have minimal interdisciplinary training, communicate with each other infrequently, and significantly disagree on the indications for RA hand surgery. Research must focus on the surgical outcomes of RA hand procedures and on improving communication between rheumatologists and hand surgeons. (J Rheumatol 2003;30:1464-72)

Key Indexing Terms:

PHYSICIAN SURVEY
HAND SURGERY

RHEUMATOID ARTHRITIS

VARIATIONS IN CARE
RHEUMATOLOGY

Rheumatoid arthritis (RA) is a significant cause of disability¹⁻³. The effects of the disease are widespread, placing burdens on patients, the healthcare system, and the workforce. Many RA patients experience difficulties

performing basic activities of daily living, and nearly 60% of patients are work disabled within 10 years of disease onset²⁻⁴. Disability from RA translates into substantial direct and indirect economic costs for both patients and society, equaling 1% of the US gross national product in 1980^{1,5}. Successful efforts to improve healthcare quality and outcomes for this population should not only enhance patients' quality of life but also increase the productivity of the workforce.

RA commonly affects hand function. Joints are stiff and painful, tendons dislocate, and digits become markedly displaced⁶⁻⁸. Two highly trained groups of physicians, rheumatologists and hand surgeons, manage RA hand deformities. However, little data exist on the extent of synergism and interspecialty communication between physicians caring for the RA hand population, which are issues that potentially influence the quality of healthcare provided.

In many areas of medicine, physicians from different specialties often have dramatically different views of how to manage specific medical conditions. For example, treatment recommendations vary between urologists and radiation oncologists for prostate cancer, between cardiac surgeons

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and cardiologists for cardiovascular disease, and between obstetricians and family medicine physicians for low risk pregnancies⁹⁻¹¹. Consensus techniques have been implemented in some of these areas to create synergistic treatment strategies, such as multidisciplinary panels and clinical practice guidelines. However, with RA, little is known about the management styles of rheumatologists and hand surgeons. We do have evidence that surgical practice patterns for common RA hand deformities vary significantly across the US, which may indicate clinical uncertainty or disagreement among referring or treating physicians^{12,13}.

In this national US survey, we compared rheumatologists' and hand surgeons' clinical evaluation of each other, communication with each other, and exposure to each other's specialty. In addition, we evaluated physicians' indications for common RA hand procedures, such as metacarpophalangeal (MCP) joint arthroplasty, small joint synovectomy, extensor tenosynovectomy, and resection of the distal ulna as a proxy for variations in physician practice patterns.

MATERIALS AND METHODS

Study population. A self-administered, cross-sectional survey was mailed to rheumatologists and hand surgeons between October and December 2001. The study population consisted of a random sample of 500 members of the American College of Rheumatology (10.3% of eligible members) and 500 members of the American Society for Surgery of the Hand (30.2% of eligible members), who were limited to active physician members (excluding trainees) of each professional organization and who lived in the continental US. The sample was randomly generated from a computer model using the 2001 membership registry of both organizations and was not based on zip code, age, or duration of professional membership.

Survey design. Before designing the survey, we performed a comprehensive literature review on surgical procedures for RA hand deformities using the Medsearch database. Discrepancies in outcomes data or areas of physician discontent were discussed with rheumatologists and hand surgeons in both the university and community setting through personal interviews. Information from the interviews and the literature search were incorporated into the survey. Pilot testing of the survey was performed by administering the survey to a sample of local physicians from both specialties to ensure content validity. Institutional review board approval was obtained from the University of Michigan to administer the survey to a national sample of physicians.

The physicians received mailings of the questionnaire at 2 times to increase the response rate. The first mailing was accompanied by a \$2.00 writing pen as a small gift of appreciation, and receipt of a completed survey made the responder eligible for a Palm Pilot raffle. Incentive gifts are standard techniques in survey research to improve response rates, especially with physician surveys, which generally have low response rates^{14,15}. The survey took 10 minutes to finish, which corresponds to the recommended survey length, and it focused on the indications and timing of different types of surgical procedures for rheumatoid hand disease (see Appendix A)¹⁶.

Data analysis. Physicians were asked to answer questions with responses organized on a 5-point Likert scale (1 = always, 2 = usually, 3 = occasionally, 4 = rarely, 5 = never), which is a standard format for survey responses¹⁷. To compare the demographic characteristics of the 2 specialty groups, we used t tests for continuous variables such as age and chi-square tests for categorical variables such as the respondent's sex. The Likert scale responses of rheumatologists and surgeons were compared using the

Wilcoxon rank sum test. For clarity in data presentation, however, Tables 1 and 2 display the results as the percentage of physicians responding positively toward the various attitudes we measured in a dichotomized form, showing positive (always or usually) versus nonpositive attitudes (occasionally, rarely, or never).

As a way to assess nonresponse bias, responses from the first mailing were compared to those of the second mailing. If responses differed between the first and second mailings, we would be concerned that nonresponding physicians are different from those that did complete the survey, a nonresponse bias that can invalidate results¹⁸. We found no statistical difference in responses, which decreases the likelihood of a nonresponse bias¹⁸. All analyses were performed with Stata v.6.0 (Stata Corp., College Station, TX, USA) statistical software, and statistical significance was set at 0.05 (2 tailed).

RESULTS

Of the 1000 potential subjects surveyed, 31 were considered ineligible (9 wrong addresses, 12 without clinical experience, 9 retired, one deceased). In all, 515 (53.1%) eligible subjects returned completed questionnaires, which is an acceptable response rate¹⁷; the response rate was 57.7% from the hand surgeons and 48.5% from the rheumatologists. Demographic data are displayed in Table 1. The groups were similar for age and sex, although surgeons were more likely to be male than rheumatologists ($p = 0.01$). No significant difference was found in the sex of responders and nonresponders in either specialty, or in the demographics of responders from the first and second mailing (Appendix B).

Physicians were asked to evaluate each other's management of rheumatoid hand disease and each other's perceived understanding of the available treatment options and outcomes (Table 2). Both rheumatologists and surgeons rated each other's knowledge of either surgical or medical options and outcomes, respectively, as poor. For example, only 30% of rheumatologists believed that surgeons have an excellent understanding of medical options for RA hand deformities, and only 26.4% of surgeons believed that rheumatologists have an excellent understanding of the available surgical options for the RA hand. Regarding the management of RA hand disease, surgeons' evaluation of rheumatologists was significantly lower than rheumatologists' evaluation of surgeons. Specifically, 31.9% of surgeons versus 80.8% of rheumatologists ($p < 0.0001$) rated the other specialty's management as appropriate, and 22.2% versus 69.2%, respectively, ($p < 0.0001$) rated the other specialty's timing of surgical referrals/surgical treatment as appropriate. In addition, 67.5% of surgeons rated rheumatologists' management of RA hand deformities as too passive, and 20.1% of rheumatologists rated hand surgeons' management of RA patients as too aggressive ($p < 0.001$).

Data on interspecialty communication are presented in Table 3. Hand surgeons rate their communication to rheumatologists as significantly higher than rheumatologists' evaluation of surgeons' communication skills. For example, while 80.7% of hand surgeons believed that they communicated the options/plans regarding their RA patients

Table 1. Survey participant demographics.

	Hand Surgeons, n = 280	Rheumatologists, n = 234	p
Age, yrs mean \pm SD	52.8 \pm 9.5	52.1 \pm 3.5	0.25*
Male, %	92.9	86.3	0.01**

* 2-group t test; ** chi-square test.

Table 2. Rheumatologists' and hand surgeons' evaluation of the other specialty's management of RA hand deformities. Responses of hand surgeons are given in *italic* type, followed by rheumatologists' responses in roman type.

	Responded Always/Usually, %		p*
	Hand Surgeons, n = 280	Rheumatologists, n = 234	
1. <i>Rheumatologists have an excellent understanding of the available surgical options for RA hand deformities</i>	26.4		0.51
Hand surgeons have an excellent understanding of the available medical options for RA hand deformities		30.0	
2. <i>Rheumatologists have an excellent understanding of the surgical outcomes for RA hand deformities</i>	19.6		0.81
Hand surgeons have an excellent understanding of the outcomes of medical therapy for RA hand deformities		21.8	
3. <i>Rheumatologists appropriately manage RA hand deformities</i>	31.9		< 0.0001
Hand surgeons appropriately manage RA hand deformities		80.8	
4. <i>Rheumatologists refer RA patients to hand surgeons at the appropriate time</i>	22.2		< 0.0001
Hand surgeons operate on RA patients at the appropriate time		69.2	
5. <i>Rheumatologists are too passive in managing RA hand deformities</i>	67.5		< 0.0001
Hand surgeons are too aggressive in treating RA patients		20.1	
6. <i>Rheumatologists and hand surgeons agree on the management of RA patients' hand disabilities</i>	35.5	62.5	< 0.0001

* Wilcoxon rank sum test based on 5 point Likert scale (Always/Usually/Occasionally/Rarely/Never).

Table 3. Communication between specialists treating RA hand deformities. Responses of hand surgeons are given in *italic* type, followed by rheumatologists' responses in roman type.

	Responded Always/Usually, %		p*
	Hand Surgeons, n = 280	Rheumatologists, n = 234	
1. <i>I communicate to rheumatologists the options/plans regarding their RA patients</i>	80.7		< 0.0001
Hand surgeons communicate to me the options/plans of surgical interventions on my RA patients		46.2	
2. <i>I communicate to rheumatologists the outcomes of surgical interventions on their RA patients</i>	85.7		< 0.0001
Hand surgeons communicate to me the outcomes of surgical interventions on my RA patients		48.1	
3. <i>When I disagree with a rheumatologist's management of a rheumatoid patient's hand disability, I relay to the rheumatologist my concern</i>	62.4		0.049
When I disagree with a surgeon's management of a rheumatoid patient's hand disability, I relay to the surgeon my concern		61.9	

* Wilcoxon rank sum test based on 5 point Likert scale (Always/Usually/Occasionally/Rarely/Never).

to rheumatologists, only 46.2% of rheumatologists believed that surgeons relay patients' options to them ($p < 0.0001$). The trends were similar for communication involving surgical outcomes for RA patients. In addition, 37.6% of surgeons and 38.1% of rheumatologists did not relay their concerns regarding patient management to each other.

Rheumatologists and hand surgeons have minimal exposure to the other specialty (Table 4). Only 9.6% of hand surgeons and 12.4% of rheumatologists practiced in a

combined interspecialty hand clinic. Although a significantly higher proportion of surgeons compared to rheumatologists rotated on the other specialty's service during training ($p < 0.01$), only 33.1% of surgeons and 20.5% of rheumatologists had interspecialty exposure. In addition, 21.7% of surgeons and 18.8% of rheumatologists did not have an active referral exchange with the other specialty.

Physicians' attitudes toward the indications for surgical intervention in RA hand deformities varied significantly

Table 4. Interspecialty exposure of physicians treating RA hand deformities.

	Responded 'Yes', %		
	Hand Surgeons, n = 280	Rheumatologists, n = 235	p*
1. Does a rheumatologist/hand surgeon evaluate patients with you in your clinic?	9.6	12.4	0.33
2. Do you have an active referral exchange with a rheumatologist/hand surgeon?	78.3	81.2	0.55
3. During your training, did you rotate on a rheumatology/hand surgery rotation?	33.1	20.5	< 0.01
4. During your training, were you exposed to a hand surgeon on a regular basis in your clinic?	NA	53.7	NA

* Chi-square statistic. NA: not applicable.

between specialties (Table 5). Respondents were asked to rate the most important indication for intervening with a particular surgical procedure. For all 3 commonly performed procedures included in the survey — MCP joint arthroplasty, small joint synovectomy, and distal ulna resection — rheumatologists and surgeons had significantly different indications for surgical intervention ($p < 0.001$, $p < 0.001$, $p = 0.001$, respectively). The largest divergence in attitudes involved small joint synovectomy: 49.8% of surgeons believed that progressive joint synovitis was the primary indication for surgical intervention compared to 12.9% of rheumatologists. Indeed, 34.7% of rheumatologists (compared to 1.8% of surgeons) believed that small joint synovectomy is never clinically indicated for rheumatoid patients. However, the physicians did show some agreement with the indications for MCP joint arthroplasty and distal ulna resection. The majority of both groups chose impaired hand function as the primary indication for MCP joint arthroplasty, and they chose impending tendon rupture as the primary indication for resection of the distal ulna.

Attitudes toward the appropriate timing of surgical interventions with extensor tenosynovectomy and MCP joint

arthroplasty are displayed in Figures 1 and 2. In patients with progressive dorsal extensor tenosynovitis, rheumatologists and hand surgeons significantly disagreed on the appropriate time to perform an extensor tenosynovectomy ($p < 0.0001$). However, some similarities existed. Both rheumatologists and hand surgeons agreed that 3 to 6 months is the most appropriate time to intervene if the synovitis is resistant to medical therapy. However, 25.7% of rheumatologists, compared to 1.5% of surgeons, believed that the procedure is appropriate after 12 or more months, and 8.4% of rheumatologists versus 1.5% of surgeons believed that extensor tenosynovectomy is never appropriate. Rheumatologists and surgeons disagreed significantly on the appropriate timing of MCP joint arthroplasty ($p < 0.001$). For example, 6.0% of rheumatologists compared to 0% of surgeons believed that the procedure is never indicated. However, Stage 3 MCP joint disease was believed by both physician groups to be the most appropriate time to perform MCP joint arthroplasty.

DISCUSSION

Our findings suggest that rheumatologists and hand

Table 5. Comparison of rheumatologists' and hand surgeons' indications for surgical intervention in rheumatoid hand disease.

	Hand Surgeons, % n = 280	Rheumatologists, % n = 234	p*
Indications for MCP joint arthroplasty			< 0.001
Impaired hand function	55.0	65.2	
MCP joint pain	40.0	21.3	
MCP joint synovitis	4.3	4.8	
Impaired hand aesthetics	0.4	4.4	
Never indicated	0	4.4	
Indications for small joint synovectomy**†			< 0.001
Progressive joint synovitis	49.8	12.9	
Joint pain	25.5	11.6	
Progressive joint destruction	14.7	19.1	
Impaired joint function	6.8	19.6	
Never indicated	1.8	34.7	
Resection of the distal ulna**			0.001
Impending tendon rupture	62.5	73.7	
Wrist pain	26.4	13.0	
Impaired wrist function	8.2	8.0	
Never indicated	1.1	4.5	

* Chi-square analysis comparing responses between specialties. ** Highest priority for the procedure. † Proximal interphalangeal or MCP joint synovectomy.

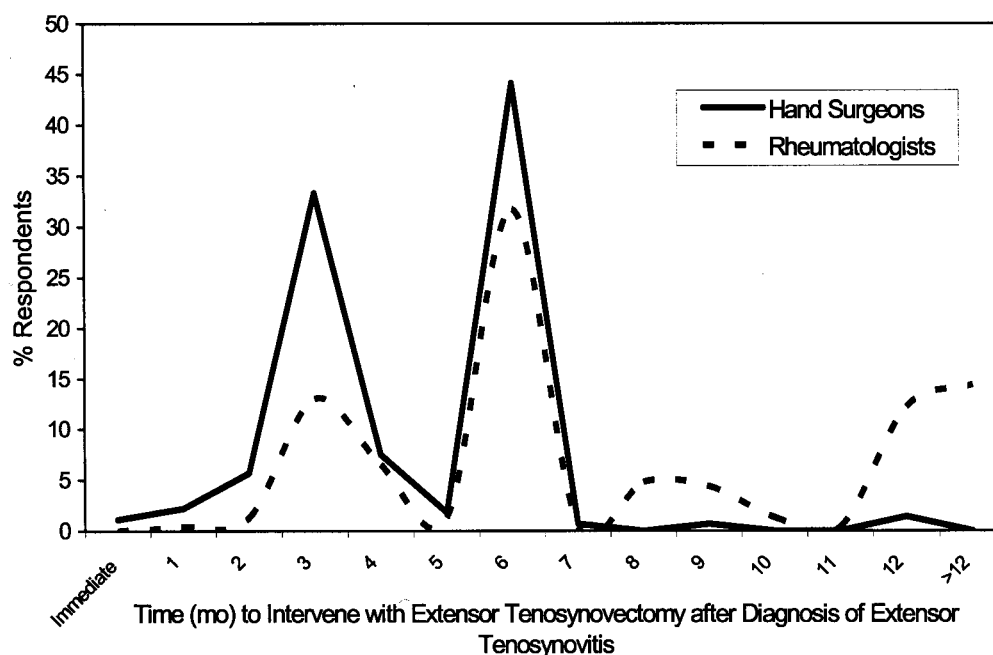


Figure 1. Appropriate time to intervene with extensor tenosynovectomy. $p < 0.0001$, Wilcoxon rank sum test.

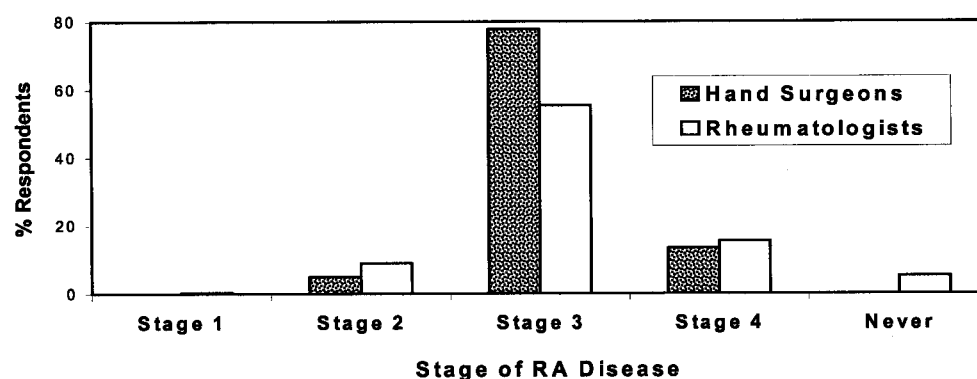


Figure 2. Appropriate time to intervene with metacarpophalangeal joint arthroplasty. $p < 0.001$, Wilcoxon rank sum test.

surgeons have limited past or current clinical exposure to each other, have limited communication with each other regarding patient care, and have significantly different opinions about the surgical indications for RA hand disease. Due to the high prevalence and the cost of rheumatoid hand disease in our society, physicians specializing in RA must develop some kind of consensus about how to care for these patients and must overcome communication barriers with other RA specialists.

Several issues are critical to creating a coordinated treatment approach to RA hand deformities. One involves the communication of information. A benefit of physician specialization is the acquisition of highly concentrated knowledge; the tradeoff is a deficiency in more generalized knowledge. Both rheumatologists and hand surgeons rated each other as having limited interspecialty knowledge of

treatment options and outcomes for RA hand disease. This is not surprising, considering that only 21% of rheumatologists and 33% of hand surgeons had exposure to the other specialty during their training, and only 12% of rheumatologists and 10% of hand surgeons currently have combined interspecialty hand clinics. However, despite or perhaps due to the deficiency in interspecialty exposure, only 62% of rheumatologists and 62% of hand surgeons communicated with each other when they disagreed with the other's management of RA hand deformities. The current US healthcare model places the burden on the general internist or family physician to acquire and integrate specialty physician treatment recommendations and to coordinate care. However, minimal progress has been made toward transferring information between specialists to create a coordinated treatment plan, which would allow the primary care physi-

cian to be the coordinator rather than the arbitrator of patient care.

Creating a coordinated treatment approach between rheumatologists and hand surgeons would not only facilitate the care provided by primary care physicians, but may also improve patient satisfaction. Rheumatologists and hand surgeons significantly disagreed on the indications for RA hand surgery. Presenting conflicting information to patients has the potential to create confusion and decrease patient satisfaction¹⁹. For example, almost half of the surgeons sampled believed that small joint synovectomy is indicated in patients with progressive joint synovitis. However, 35% of rheumatologists believed that this procedure is never indicated, and only 13% of rheumatologists believed it is indicated in cases of progressive joint synovitis. How can patients be expected to incorporate these strongly opposing opinions, decide on a treatment approach, and feel confident in their decision?

Surgical outcomes research is limited for physicians managing RA hand deformities^{20,21}. Therefore, it is not surprising to find significant variations in physicians' attitudes toward the surgical management of RA hand disease and large variations in the rates of common RA hand procedures¹². Healthcare professionals treating the RA population must recognize that they provide uncoordinated patient care. However, rheumatologists and hand surgeons have an opportunity to be leaders in health care by developing an interdisciplinary, comprehensive health care delivery system. Collaboration in healthcare can improve health outcomes because the results of many practitioners exchanging ideas and sharing experiences can be much more powerful than what an individual practitioner can offer²². Any effort to improve the quality of care for the RA population will require a collaborative effort by primary care physicians, rheumatologists, and surgeons. To create a coordinated approach to the surgical care of the rheumatoid hand, we need an international effort to (1) obtain outcome data, (2) disseminate the resulting data, and (3) implement treatment plans.

Outcomes data. The gold standard of medical research is the randomized control trial (RCT), which has never been used to study the outcomes of surgical interventions for rheumatoid hand disease. RCT are expensive and labor intensive, but a well conducted RCT can provide the most reliable evidence with fewer concerns regarding the inherent errors, such as confounding and bias, associated with other research methods. To aid the generalizability and to obtain a sufficient sample size, a multidisciplinary and multicenter approach would be optimal. Collaboration would be required by both rheumatologists and hand surgeons to decrease potential provider bias. In particular, we need to study the indications, appropriate timing, and outcomes for MCP joint arthroplasty and for prophylactic procedures such as extensor tenosynovectomy (to prevent tendon rupture)

and small joint synovectomy (to prevent joint destruction).

Data dissemination. Multidisciplinary panels of primary care physicians, rheumatologists, and surgeons are needed to synthesize the available data. These panels would be beneficial now to understand the limited information presently available, and in the future when better outcome data are accessible. These panels promote interdisciplinary communication and have the potential to create unbiased synergistic treatment approaches for more unified patient care. This technique is used by research centers such as the Rand Corporation to coordinate treatment strategies among specialties²³. In addition, promoting an interdisciplinary approach to resident and fellow education is another opportunity to promote collaborative patient care.

Data implementation. Clinical pathways, designed by a multidisciplinary approach, are useful techniques to implement the available outcomes data and to aid in outcome assessment²⁵. Issues such as when and why to intervene surgically can be addressed and protocols established. The outcomes of such protocols can then be used as pilot data for funding a RCT. However, one potential barrier to clinical pathways is the perceived infringement on professional autonomy. Therefore, pathways should be presented as guidelines to patient care and not absolute standards of care.

Combined hand clinics, incorporating rheumatologists, hand surgeons, and physical/occupational therapists, can provide a useful comprehensive approach to patient care. However, these clinics can be more convenient for patients than for physicians, which decreases their popularity among healthcare providers. Health outcomes and patient satisfaction need to be assessed with this health delivery model to support its implementation.

Our study has several limitations. The self-reported attitudes of these physicians may not translate into actual practice patterns, which were not measured in this study. In addition, a nonresponse bias may confound the results. However, the difference in attitudes between hand surgeons and rheumatologists is exceptionally large; a nonresponse bias would have to be extreme to account for these differences.

Rheumatologists and hand surgeons have minimal interdisciplinary training, have limited interdisciplinary communication regarding clinical management, and significantly disagree on the indications for and timing of hand surgery for rheumatoid deformities. Future efforts must focus on enhancing the communication between hand surgeons and rheumatologists and developing coordinated treatment approaches to RA hand deformities.

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Appendix A

I. In your clinical experience:

	Always	Usually	Occasionally	Rarely	Never
1. Rheumatologists have an excellent understanding of the available surgical <u>options</u> for rheumatoid arthritis (RA) hand deformities/ Hand surgeons have an excellent understanding of the available medical <u>options</u> for rheumatoid arthritis (RA):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Rheumatologists have excellent understanding of the <u>outcomes</u> of surgery for RA hand deformities/ Hand surgeons have excellent understanding of the <u>outcomes</u> of medical therapy for RA hand deformities:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Rheumatologists appropriately manage RA hand deformities/ Hand surgeons appropriately manage RA hand deformities:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Rheumatologists refer RA patients to hand surgeons at the appropriate time/ Hand surgeons operate on RA patients at the appropriate time:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rheumatologists are too passive in managing RA hand deformities/ Hand surgeons are too aggressive in treating RA patients:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I communicate to rheumatologists the options/plans regarding their RA patients/ Hand surgeons communicate to me the options/plans of surgical interventions on my RA patients:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix A. (continued)

7. I communicate to rheumatologists the outcomes of my surgical interventions on their RA patients/ Hand surgeons communicate to me the outcomes of surgical interventions on my RA patients: ☐₁ ☐₂ ☐₃ ☐₄ ☐₅

8. When I disagree with a rheumatologist's management of a rheumatoid patient's hand disability, I relay to the rheumatologist my concern/ When I disagree with a surgeon's management of a rheumatoid patient's hand disability, I relay to the surgeon my concern: ☐₁ ☐₂ ☐₃ ☐₄ ☐₅

9. Rheumatologists and hand surgeons agree on the management RA patients' hand disabilities: ☐₁ ☐₂ ☐₃ ☐₄ ☐₅

2. A 53-year-old woman with RA who has never received disease-modifying aggressive medical therapy presents to you for the first time. She has swelling on the dorsum of her wrist involving several of the extensor compartments, consistent with the diagnosis of **extensor tenosynovitis**. Tendons are intact and functional on exam, without signs of rupture.

A. In your experience, what is the appropriate length of time to wait for her to respond to medical therapy before an *extensor tenosynovectomy* procedure is performed? Please circle one answer (the times are given in months):

Intervene	1	2	3	4	5	6	7	8	9	10	11	12	>12	Intervention
Immediately ₀														not appropriate ₁₃

3. A 53-year-old woman with RA presents to you for the first time. She has had RA for many years and has received maximal medical therapy with disease-modifying agents.

A. In your experience, the most appropriate time for a *metacarpophalangeal (MCP) joint arthroplasty* is at which stage of disease?

- ☐₁ **Stage 1**, characterized by synovitis at the metacarpophalangeal joints, minimal ulnar deviation, and little extension lag of the fingers
- ☐₂ **Stage 2**, characterized by slight ulnar deviation of the extensor tendons, 15° of extensor lag of the fingers, and minimal erosion of the articular cartilage on radiographs
- ☐₃ **Stage 3**, characterized by ulnar deviation of 15-20 degrees of the extensor tendons, extensor lag of at least 20°, moderate erosion of articular cartilage on radiographs, and pain at the MCP joint
- ☐₄ **Stage 4**, characterized by severe joint destruction and fixed volar subluxation of the proximal phalanx with greater than 25° of ulnar deviation of the extensor tendons, extensor lag of 30° or greater, and a reduced flexion arc
- ☐₅ **Never indicated**
- ☐₆ **Other**, please specify: _____

4. Please prioritize what you believe are the indications for *MCP joint arthroplasty* in RA patients.

	<u>Indications</u>
_____ <i>Highest</i> priority	1. Synovitis of MCP joint 4. Impaired hand aesthetics
_____ <i>Second</i> highest priority	2. Impaired hand function 5. Never indicated
_____ <i>Third</i> highest priority	3. MCP joint pain 6. Other, please specify: _____

5. Please prioritize what you believe are the indications for *distal ulna resection* in RA patients.

	<u>Indications</u>
_____ <i>Highest</i> priority	1. Impending tendon ruptures 4. Never indicated
_____ <i>Second</i> highest priority	2. Impaired wrist function 5. Other, please specify: _____
_____ <i>Third</i> highest priority	3. Wrist pain

6. Please prioritize what you believe are the indications for *small joint synovectomy* (proximal or metacarpophalangeal joint synovectomy) in rheumatoid hands.

	<u>Indications</u>
_____ <i>Highest</i> priority	1. Joint pain 4. Progressive joint synovitis
_____ <i>Second</i> highest priority	2. Impaired joint function 5. Never indicated
_____ <i>Third</i> highest priority	3. Progressive joint destruction 6. Other, please specify: _____

Appendix B.

Comparison of survey respondents' characteristics from the first and second mailing			
	N (%)	Age (Mean Year)	% Male
<u>Hand Surgeons</u>			
1 st Mailing	204 (72.9)	52.9	93.1
2 nd Mailing	76 (27.1)	54.4	93.4
<i>P value</i>		0.29*	1.00*
<u>Rheumatologists</u>			
1 st Mailing	164 (69.8)	52.4	89.0
2 nd Mailing	71 (30.2)	52.2	83.1
<i>P value</i>		0.79*	0.21*

*T test . *Chi-square analysis.