Referring Physicians' Knowledge of Hand Surgery

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Abstract Hand surgeons rely on referrals from general providers. Appropriate referral is dependent upon referring physicians having an understanding of the problem and available treatments. This study evaluates the referring physicians' knowledge and perceptions of basic hand problems and their treatment. This study also evaluates the impact of a brief lecture on our referring physicians' understanding of hand issues. A survey instrument was administered to referring physicians. The instrument addressed general hand knowledge and perceptions toward hand surgery. The physicians also attended a lecture on general hand problems and their treatments. The survey was repeated 2 weeks post-lecture. Subjects had a pre-lecture knowledge score of 65% correct and post-lecture a score of 85%, $p < 0.05$. The participants were knowledgeable about common hand problems, such as carpal tunnel syndrome. Knowledge gaps did exist, for example, only 37% recognized the symptoms of basilar thumb arthritis. Initially, the referring physicians had less positive views about surgical interventions, such as surgery to help the pain of basilar thumb arthritis. After the lecture, the responders had significantly more favorable attitudes toward surgery. This study found that referring physicians

had variable knowledge about common hand problems, and they had doubts relating to the efficacy of some hand surgeries. This study also found that a directed lecture improved these providers' knowledge and their perceptions of hand surgical interventions. Hand surgeons can improve their referring physicians understanding and perceptions of hand surgery through a directed grand rounds type lecture.

Keywords Hand surgery · Health knowledge attitudes practice · Referral and consultation

Introduction

Hand surgery is a specialized field that relies upon general providers to evaluate and refer patients. Referring physicians often act as the gatekeepers to access to a hand surgeon. For this hierarchical system to function, these referring physicians must have basic knowledge of upper limb problems and understand what treatment options hand surgeons may offer to care for their patients. Limitations in the understanding of hand surgery by referring physicians will hamper timely and appropriate referrals.

Previous work has shown that the referral process for some highly specialized hand care is problematic. Referring physicians have been shown to have negative perceptions or misinformation about surgical interventions for tetraplegia and rheumatologic hand problems [1, 6]. These studies found a general bias toward nonsurgical treatments, which negatively impacted appropriate referrals to surgeons. Perhaps general practitioners have similar misperceptions about more common hand surgical problems.

This study had two aims: firstly, to clarify referring physicians' knowledge and perceptions of basic hand problems and their treatment and, secondly, to assess whether a lecture given by a hand surgeon on common

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hand problems would improve referring providers understanding of hand pathology and positively affect their perceptions toward surgical interventions.

Methods

The study began with a focus group of hand surgeons and primary care providers. This group discussed hand topics and made a list of topics that seemed relevant to both disciplines. From these discussions, eight multiple-choice questions on hand topics were designed using described educational techniques (Appendix 1) [3]. These questions addressed several common hand complaints, such as carpal tunnel syndrome, trigger fingers, mallet fingers, and basilar thumb arthritis. The survey also asked questions about perceptions of hand treatments using a five-point Likert scale (1=strongly agree, 5=strongly disagree). Finally the survey included questions about the practice patterns and the level of previous musculoskeletal training of the referring physicians. The focus group reviewed the questions to determine face validity of the survey. The survey was designed to take approximately 5 min to complete. These questions were designed to provide information on the subject's knowledge and perceptions toward hand problems and their care.

The next phase of the study was the intervention, which was a standard 1-h grand rounds type lecture on the diagnosis and treatment of common hand problems based on the best available evidence in the current literature. One author (JY) gave this presentation during regular conferences to the physician groups, who commonly refer to our university hand practice. The survey was offered to all who attended the conferences and included physicians from the university student health center, the department of internal medicine, the family practice department, and from physical medicine and rehabilitation. Prior to the lecture, the providers completed the survey (Appendix 1). Two weeks following the lecture, the providers were asked to complete a second survey of the same questions as a post-test to assess information retention and assess if perceptions toward hand treatments had changed. The analysis consisted of comparison of means of the test scores between the two time-points (pre- and post-lecture). A *p* value less than 0.05 was considered significant.

The tests were anonymous, and since these data were of a nonsensitive nature, formal written informed consent was waived. The University Medical Center Institutional Review Board approved this study.

Results

Thirty-one physicians completed the pre-test, and 24 completed the post-test, for a retention rate of 77.4%. The

practice information of respondents is shown in Table 1. The majority of the physicians were new to practice, which likely is secondary to the academic nature of this institution. Interestingly, whereas 100% of the Physical Medicine and Rehabilitation Medicine physicians indicated they had a musculoskeletal rotation during their residency training, only 21% of the Internal Medicine and Family Practice physicians had such training. The providers were asked what were the most common hand problems seen in their practices: carpal tunnel (78%), tendinitis (13%), and arthritis (8%). Upper extremity complaints were common with 39% of these physicians seeing more than ten patients in the past month for these complaints and 26% sending up to ten patients to a hand specialist within the past month.

The results of the knowledge portion of the survey are displayed by question in Table 2. The knowledge test revealed that subjects had a pre-lecture overall knowledge score of 65% correct. There was wide variability in pre-test knowledge among the different hand topics. For example, almost all physicians (97%) surveyed knew the median nerve is the nerve involved in carpal tunnel syndrome but only 35% of respondents knew that elbow flexion exacerbates the symptoms of cubital tunnel syndrome, and only 37% of subjects recognized the symptoms of basilar thumb arthritis. After the lecture, all of the knowledge questions scores increased. The overall post-test score knowledge score increased to 85% correct ($p<0.005$).

We found that after the lecture, the respondents changed their answers about the value of hand surgery (Table 3). There were significant improvements in the referring physicians' perceptions toward the utility of surgery in the treatment of common hand problems, such as thumb carpometacarpal joint arthritis ($p<0.05$), carpal tunnel syndrome ($p<0.01$), and ganglion cysts ($p<0.001$). Fol-

Table 1 Demographics of respondents.

Type of practice	35% internal medicine/family practice 39% PM&R 26% University Health Center
Years in practice	68% less than 5 years 16% 5–10 years 7% 10–20 years 9% greater than 20 years
Number of patients in month with UE complaints	0% no patients 26% 1–5 patients 35% 6–10 39% >10 patients
Number of patients referred to a hand specialist in the last month	16% no patients 45% 1–5 patients 26% 6–10 patients 13% greater than 10 patients

Table 2 Knowledge test results.

Knowledge topic	Pre-test % correct	Post-test % correct	<i>p</i> value
Steroid therapy for trigger	47	83	<0.005
Initial treatment for snuff box tenderness	81	88	0.50
Nerve involved in carpal tunnel syndrome	97	100	0.40
Position of arm that exacerbates cubital tunnel symptoms	35	79	0.001
Symptom of basilar thumb arthritis	37	73	0.05
When to refer a patient with Dupuytren's disease to hand surgeon	50	96	0.001
Initial treatment for tennis elbow	83	92	0.54
Initial treatment for mallet finger	71	96	0.07

lowing the lecture, all of the responses were more positive toward surgical intervention for these problems.

Discussion

Referring physicians are critical partners for hand surgeons; yet they may have misconceptions or knowledge deficiencies that may hamper a smooth referral process. We found that referring physician providers were knowledgeable about many common hand problems, but some areas of weakness were present. Few providers knew the symptoms of basilar thumb arthritis or arm positions to avoid with cubital tunnel syndrome. It is clear that improving referring physicians' understanding of these common hand ailments would improve primary care and facilitate recognition of surgical problems for prompt referral.

Musculoskeletal complaints are one of the most common causes for the utilization of medical care [12, 14]. Yet medical school musculoskeletal education has been shown to have deficiencies [8, 16]. Freedman et al. performed a study, which highlighted the deficiencies in musculoskeletal education. They gave a cognitive exam to recent medical school graduates and found that 82% of their participants failed to have a basic understanding of orthopedic issues [9]. Matzkin found that those participants who had taken an orthopedic elective had significantly higher musculoskeletal scores [13]. Unfortunately, the availability of these electives may be

limited with the increasing demands by other mandated medical school courses. Hand surgeons need to be aware that their gatekeepers and primary referral sources may not be as familiar with common hand problems. This means that given the current limitations of the education process if surgeons want the most efficient referral process, surgeons need to make efforts to educate their colleagues on the field of hand surgery. This teaching could be done in a simple 1-h lunchtime lecture to referring providers. This will not only improve the referring physicians' understanding of hand problems but will also familiarize them with their local hand surgeons' treatment algorithm.

Mistrust of surgical interventions by nonsurgical providers is a particularly vexing problem that may be more common than expected. Several studies have shown that nonsurgical providers doubt the efficacy of surgical interventions, and this can impede the referral process [1, 2, 6]. We found that prior to the lecture, providers had less positive views of surgical interventions and more positive views about conservative measures. Before the lecture, respondents generally believed that physical therapy could resolve most symptoms of carpal tunnel syndrome despite a 2003 Cochrane review that showed that surgical intervention had statistically better outcomes than nonsurgical treatment [18]. After exposure to an evidence-based lecture, respondents had more favorable views of surgery. The power of this one intervention to affect opinions is not surprising because the specialist and referring doctor relationship continues to be important to appropriate and timely referrals [10, 11, 15]. Physicians heavily rely on their colleagues as sources for information and adoption of new technology [4, 5, 7, 17].

There are limitations of this study. This is a study of small sample size in one geographical area. Practice patterns clearly have geographical variation, and this study does not propose that the perceptions of our referring physicians would be generalizable. However, the physicians at this academic institution drew their training from around the country, so geographic variations may have been mitigated. Nevertheless, preconceptions are universal, and studies suggest that the nonsurgical specialties generally have reservations about the efficacy of many surgeries.

Although there is often variable agreement among hand surgeons about the treatment of basic hand problems, a local consensus on treatment algorithms would enhance the referral

Table 3 Perceptions of hand treatments.

Topic	Pre-test score	Post-test	<i>p</i> value
Surgery for base of thumb arthritis relieves pain	3.3	2.5	0.05
There is a low recurrence rate of ganglion after aspiration	3.6	4.5	0.001
Therapy can relieve most patients with carpal tunnel syndrome	2.6	3.3	0.01

Likert scale 1 through 5 (1=strongly agree, 5=strongly disagree)

process. This study shows that misperceptions of hand surgery are present in referring physicians and a 1-h interaction

between surgeon and referring physicians may enhance the consensus between these diverse specialties.

Appendix 1. Test given to providers

This first section asks some questions on your training and practice

Read each question carefully and place a check in the box that most closely reflects your experience

1. In my training, I had a rotation that focused on musculoskeletal medicine?

Yes ----- ☐₁

No ----- ☐₂

2. In the last month, how many patients have complained of upper extremity problems?

No patients----- ☐₁

1-5 patients----- ☐₂

6-10 patients----- ☐₃

Greater than ten----- ☐₄

3. In the last six months, how many patients have you referred to a specialist for an upper extremity complaint?

No patients----- ☐₁

1-5 patients----- ☐₂

6-10 patients----- ☐₃

Greater than ten----- ☐₄

4. How would you describe your practice's patient population?

All ages including children ☐₁

Adults all ages----- ☐₂

Adults mostly older than 50 ☐₃

5. How many years have you been in practice?

Less than 5 years----- ☐₁

5-10 years----- ☐₂

10-20 years----- ☐₃

This next section represents some knowledge questions on hand and upper extremity problems.

Please check the best answer

1. What is the first line of treatment for a trigger finger?

- Splinting ☐₁
- Steroid injection ☐₂
- Physical therapy ☐₃
- Surgery ☐₄

2. A patient falls on his hand and is tender to palpation in the “snuff box” (the space between the thumb extensor and abductor tendons). Initial x-rays show no fracture. What is the initial treatment?

- Splint the wrist only ☐₁
- Immobilize thumb and wrist ☐₂
- Physical therapy ☐₃
- No additional treatment ☐₄

3. What nerve is compressed in carpal tunnel syndrome?

- Median nerve ☐₁
- Ulnar nerve ☐₂
- Palmar cutaneous nerve ☐₃
- Radial nerve ☐₄

4. What are classic symptoms of basilar thumb arthritis?

- Pain extending the thumb ☐₁
- Numbness of the thumb ☐₂
- Pain opening jars ☐₃
- Locking of the thumb ☐₄

5. What arm positions aggravate the symptoms of “cubital tunnel” syndrome?

- Flexing the wrist ☐₁
- Extending the wrist ☐₂
- Flexing the elbow ☐₃
- Extending the elbow ☐₄

6. When should a person with Dupuytren's disease see a hand surgeon?

- Painful nodule ☐₁
- Small contracture of the proximal inter-phalangeal joint ☐₂
- Multiple palmar cords but no contracture ☐₃
- Knuckle pads ☐₄

7. How should a patient with "mallet" finger be initially treated?

- Removable splint of finger ☐₁
- Extension splinting of distal inter-phalangeal joint only ☐₂
- Physical therapy ☐₃
- Buddy taping to other finger ☐₄

8. What is the first line of treatment for "tennis elbow"?

- Surgery ☐₁
- Counter force brace ☐₂
- Elbow padding ☐₃
- Steroid Injection ☐₄

Please fill in the blanks for the questions below

The most common hand complaint I see in practice is:

I perform the following office procedures on the upper extremity: (for example trigger injections, ganglion aspirations)

After the following statements, please check one response that best represents your beliefs

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Surgery for base of thumb arthritis relieves pain	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
I am comfortable injecting trigger fingers	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅
I am comfortable examining the hand	☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅

There is a low recurrence ☐₁ ☐₂ ☐₃ ☐₄ ☐₅

rate of ganglion after

aspiration

Therapy can relieve most ☐₁ ☐₂ ☐₃ ☐₄ ☐₅

patients with carpal tunnel

syndrome

I know a hand surgeon who ☐₁ ☐₂ ☐₃ ☐₄ ☐₅

will see my patients

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