

SBRN vs Sural Group Comparisons		
Factor	SBRN (n=25)	Sural (n=50)
Age at Surgery	30.5	30.7
Male	76%	80%
BMI	26.9	27.4
Smokers	8 (32%)	8 (14%)
Targeted Muscles		
Deltoid	5	28
Triceps	11	8
Biceps	9	14
Length of Graft	17.8 (9-28)	16.1 (5-28)
Proximal Connection		
Spinal Accessory	13	13
Upper Trunk	2	12
Cervical Nerve Root	9	25
FMT to elbow flexor	2 (of 9)	2 (of 14)

PAPER 66

Clinical Paper Session 12: Hand 2
 Saturday, September 12 • 2:29–2:36 PM
 Treatment, Prognosis/Outcomes

Benign Hand Tumors Have a Clear Indication for Surgery According to the Patient-rated Outcome Measures

Level 4 Evidence

Michiro Yamamoto, MD

Takanobu Nishizuka, MD
 Katsuyuki Iwatsuki, MD, PhD
 Shigeru Kurimoto, MD
 Hitoshi Hirata, MD

Hypothesis: The purpose of this study was to report the patient-rated outcome measures (PROMs) using the Hand20 questionnaire (Suzuki et al. JBJS 2010) before and after surgery of the benign upper limb tumor. We hypothesized that benign upper limb tumors have a clear indication for surgery according to the PROMs.

Methods: This study included 301 consecutive patients with histories of benign bone and soft tissue tumors of the upper limb, who had undergone surgery. There were 130 male and 171 female patients with a mean age of 45 years (range, 11–87 years). The diagnoses included 72 ganglions, 37 vascular tumors, 31 giant cell tumors of tendon sheath (GCTTS), 24 schwannomas, 21 lipomas, 21 enchondromas, 17 glomus tumors, 16 fibromas, 15 exostoses, 12 epidermoid cysts, 6 vascular leiomyomas, 6 granulomas, and 23 others.

The tumors were located on the finger in 147 cases, hand in 51 cases, wrist in 61 cases, forearm in 18 cases, elbow in 16 cases, and upper arm and axilla in 8 cases.

Tumor size was classified into 3 groups: smaller than 1 cm (45 cases), between 1 and 3 cm (157 cases), and larger than 3 cm (99 cases).

We have prospectively assessed PROMs using Hand20 questionnaire before and after surgery.

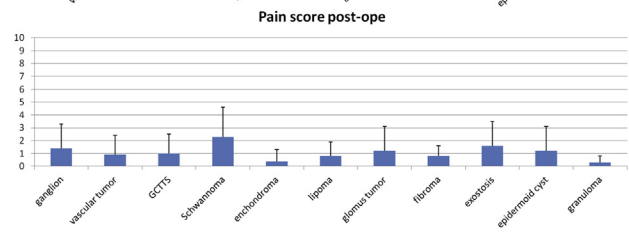
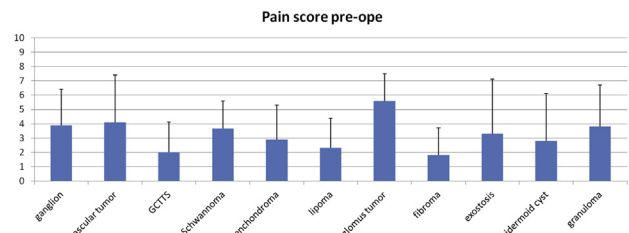
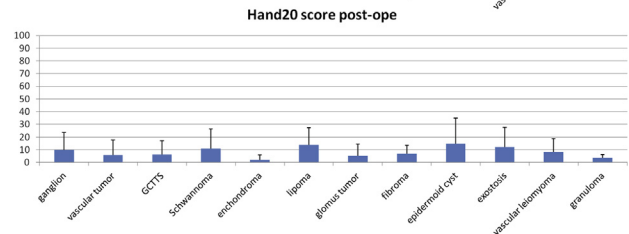
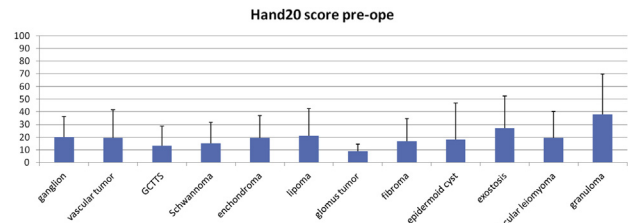
The mean period from surgery to assessment was 21 months (range, 6–78 months).

Results: The mean Hand20 and pain scores significantly improved in patients with ganglions, vascular tumors, GCTTS, schwannomas, enchondromas and lipoma. The mean pain scores in patients with glomus tumors improved significantly, but the mean Hand20 scores improved without significance. In patients with fibromas, exostoses, epidermoid cysts, granulomas, and vascular leiomyomas, both the mean Hand 20 and pain scores improved without statistical significance. (Figure 1 and 2).

As to the size of the tumors, the mean Hand20 and pain scores significantly improved in all 3 groups.

The mean Hand20 scores were significantly improved in patients with tumors located in the finger, thumb, hand, and wrist. However, the mean Hand20 scores were improved without statistical significance in patients with tumors located in the forearm, elbow, upper arm, and axilla.

Summary: Upper limb tumors are frequently encountered by hand surgeons. Surgery is indicated not only to sample the tumor tissue for definitive diagnosis, but also to improve the function and aesthetic outcome of the hand. According to the results of PROM, benign hand tumors located within the distal upper limb have a clear indication for surgery.



REFERENCE

1. Suzuki M, Kurimoto S, Shinohara T, et al. Development and validation of an illustrated questionnaire to evaluate disabilities of the upper limb. *J Bone Joint Surg Br.* 2010;92(7):963–969.

PAPER 67

Clinical Paper Session 12: Hand 2
 Saturday, September 12 • 2:36–2:43 PM
 Basic Science

av integrin is a Crucial Regulator in the Development of Dupuytren Contracture

N/A - Not a clinical study

Yuichiro Matsui, MD, PhD
 Shigeyuki Kon, PhD
 Tadao Funakoshi, MD, PhD
 Tomoe Miyashita, Undergrad
 Tadashi Matsuda, PhD
 Norimasa Iwasaki, MD, PhD

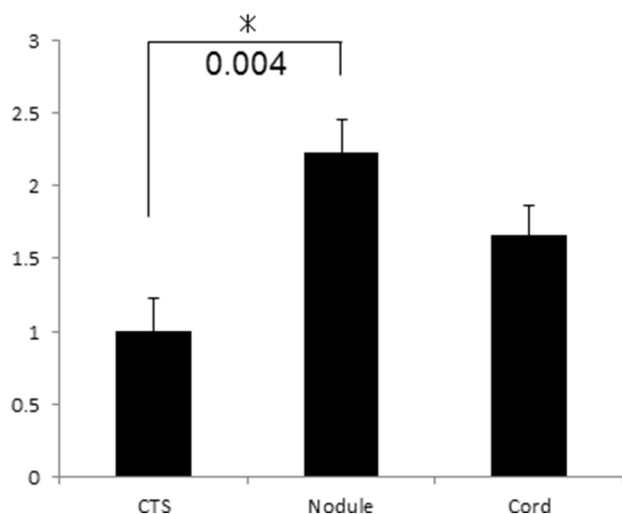
Hypothesis: Although Dupuytren contracture is characterized by myofibroblast development and increased cytokines including transforming growth factor- β 1 (TGF- β 1) in the palmar fascia, the relationship between TGF- β 1 and α v integrin, which is considered to be related to fibrosis, has not been clearly elucidated. We hypothesized that α v integrin would play an important role in the development of Dupuytren contracture.

Methods: Seven male patients whose mean age at the time of surgery was 70.7 years (range, 68 to 73) underwent partial fasciectomy as treatment for Dupuytren contracture. The nodule and cord were isolated from the palmar fascial tissues of the patients. Normal palmar fascia was obtained from seven control patients with carpal tunnel syndrome undergoing carpal tunnel release. These included two male and five female patients whose mean age at the time of surgery was 67.0 years (range, 36 to 88). Histologic and immunohistochemical analyses were performed to investigate the expression patterns of the myofibroblast and integrins. The expression of TGF- β 1 and α v-, α 4-, β 6-, β 8-integrins were assessed by real-time PCR reaction. Statistical comparisons were performed using paired t-tests ($P < 0.05$).

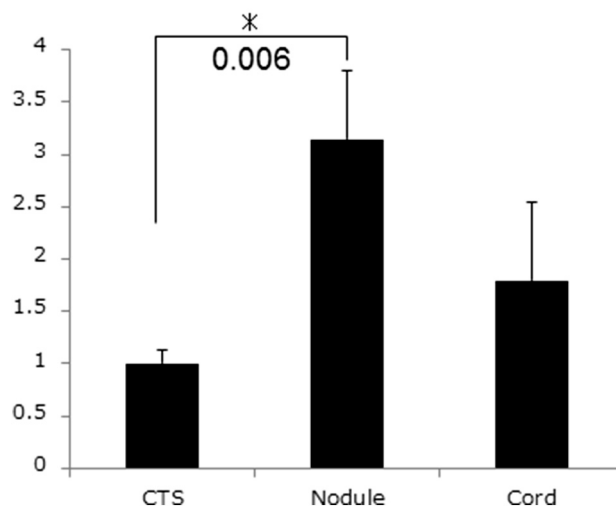
Results: The spreading and proliferation of fibroblasts were found in nodules, while few fibroblasts were detected in cords and normal palmar fascia. In immunohistochemical analysis, alpha-smooth-muscle-actin (a-SMA)-positive cells were mainly observed in nodules, while few a-SMA-positive cells were found in normal palmar fascia. Among the a-SMA and integrins, a-SMA and α v integrin were markedly induced and co-localized in nodules. Real-time PCR analysis confirmed that the expression of TGF- β 1 and α v integrin genes were significantly increased in nodules, as compared to those in normal palmar fascia ($P = 0.004$ and $P = 0.006$, respectively) (Figure 1A and 1B).

Summary: Henderson et al. showed that α v integrin controls a core molecular pathway that regulates fibrosis in several organs. In fact, we found the expression of TGF- β 1 and α v integrin were significantly increased in nodules, as compared to those in normal fascia. The obtained results indicate that α v integrin is a critical intrinsic regulator of the growth of fibrous tissue in Dupuytren contracture via regulating TGF- β 1 expression. α v integrin will become a target molecule for the injection treatment of Dupuytren contracture.

TGF- β 1 (β -actin)



α V(β -actin)



REFERENCES

- Henderson NC, Arnold TD, Katamura Y, et al. Targeting of α v integrin identifies a core molecular pathway that regulates fibrosis in several organs. *Nat Med.* 2013;19(12):1617–1624.
- Magro G, Lanzafame S, Micali G. Co-ordinate expression of α 5 β 1 integrin and fibronectin in Dupuytren's disease. *Acta Histochem.* 1995;97(3):229–233.
- Kloen P. New insights in the development of Dupuytren's contracture: a review. *Br J Plast Surg.* 1999;52(8):629–635.
- Balaguer T, David S, Ihrai T, Cardot N, Daideri G, Lebreton E. Histological staging and Dupuytren's disease recurrence or extension after surgical treatment: a retrospective study of 124 patients. *J Hand Surg Eur Vol.* 2009;34(4):493–496.
- Hurst LC, Badalamente MA, Hentz VR, et al. Injectable collagenase clostridium histolyticum for Dupuytren's contracture. *N Engl J Med.* 2009;361(10):968–979.

PAPER 68

Clinical Paper Session 12: Hand 2
 Saturday, September 12 • 2:43–2:50 PM
 Treatment, Prognosis/Outcomes, Hand and Wrist

The Effect of Corticosteroid Concentration on Glycemic Control in Patients with Diabetes Mellitus

Level 4 Evidence

Amar Arun Patel, MD
 Nikola Lekic, MD
 Megan E. Fleming, MD
 David Chen, MD
 Patrick W. Owens, MD
 Morad Askari, MD

Hypothesis: Corticosteroid injections have proven to be less effective in diabetic patients and may result in transient elevations in blood glucose levels. We hypothesize that triamcinolone injected at a concentration of 10 cc/ mg (T-10) is equally successful, safer, and more cost-effective than triamcinolone 40 cc/mg (T-40).

Methods: All patients with type II diabetes mellitus and presenting to a university-based hand surgery clinic were prospectively- enrolled in this study if they were candidates for a corticosteroid injection. Either T-10 or T-40 was administered based on surgeon preference. Fasting glucose the morning of injection, QuickDash scores prior to injection, and location of pain were recorded. Blood glucose was recorded the evening of the injection, and the fasting glucose was recorded each morning until it normalized