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## COLLAGENASE TREATMENT OF DUPUYTREN' CONTRACTURE – RESULTS AND CURRENT OPINION

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### SUMMARY

Collagenase treatment of Dupuytren contracture is getting more popular. There is a steady growing number of patients treated with this method in European Community and North America. However in Poland there is still lack of official data regarding popularity of this method. It is a treatment modality confined only to private sector. The recent mid-term results in literature confirms effectiveness of this method and cost effective. However lack of supporting in national health system and still limited knowledge among orthopaedics and hand surgeons makes this method marginal.

**Keywords:** Dupuytren's contracture, treatment methods, results of treatment of Dupuytren contracture, collagenase treatment, xiapex

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### Introduction

Enzymatic aponeurotomy is quickly gaining in popularity as a treatment modality for Dupuytren's contracture (DC). The number of patients treated by this novel method

## LECZENIE KOLAGENAZĄ PRZYKURCZU DUPUYTRENA – REZULTATY I OBECNA OPINIA

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### STRESZCZENIE

Leczenie choroby Dupuytrema sposobem enzymatycznej aponeurotomii staje się coraz bardziej popularne. Stale rośnie liczba leczonych tą metodą pacjentów w krajach Unii Europejskiej i Ameryki Północnej. W Polsce brak jest oficjalnych danych dotyczących popularności tej metody. Jako metoda stosowana jedynie w lecznictwie prywatnym jest ona mało popularna. Dane z piśmiennictwa wskazują iż jest to metoda skuteczna i porównywalna do leczenia operacyjnego. Brak finansowania tej metody przez Narodowy Fundusz Zdrowia i wciąż mała wiedza lekarzy ortopedów i chirurgów ręki w Polsce czyni ta metodę wciąż marginalną.

**Słowa kluczowe:** przykurcz Dupuytrema, lecznicze metody, rezultaty, leczenie kolagenazą, xiapex

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is steadily increasing, while the number of those treated surgically is proportionally decreasing. Unfortunately, there is no official data on the use of this enzymatic procedure

in Poland. Annual estimates on the number of procedures performed are based on the quantity of the product sold by the official product distributor. Based on this data, the enzymatic aponeurotomy is rarely used in Poland.

### **Aim**

The aim of this paper is to analyse the recent literature about treatment of Dupuytren's contracture with collagenase in terms of efficacy and results and to evaluate its impact on popularity of treatment methods.

### **Materials and methods**

Treatment of DC with collagenase is getting more popular. We decided to analyse the recent literature of this treatment method in terms of efficacy and its influence on gaining popularity. In the United States, the enzymatic treatment for Dupuytren's contracture has been approved in 2010. Since then the number of patients undergoing this non-surgical procedure has been continually growing, reaching 29.2% of all DC treatments performed in 2013. In fact enzymatic aponeurotomy is performed half as frequently as limited fasciectomy, which is currently the most popular treatment for Dupuytren's contracture performed in 59% of all DC cases (Zhao *et al.* 2016). Needle aponeurotomy is another common method of treatment for DC, holding firmly at a constant 11% of the market. It should be noted however that the US medical market is governed by different financial laws than its European counterpart. Estimates show that even with its steep price the enzymatic treatment modality generates significantly lower costs for the health care system than its surgical counterpart. The surgical treatment is more expensive due to the high costs of OR personnel (surgeon, surgeon's assistant, anaesthesiologist, surgical nurses, ect.) longer recovery time and longer absence from work for the patient. The non-surgical enzymatic aponeurotomy eliminates the cost of the operating theatre and associated

personnel because it is an office procedure. Further savings are gained due to shorter recovery time. However there is no available data regarding this calculations in Polish medical system.

In Europe, including Poland, enzymatic treatment for Dupuytren's contracture is not covered by the national health insurance. Patients who wish to undergo this procedure must cover the full cost of treatment. Therefore, enzymatic aponeurotomy continues to be a far less popular treatment option with patients, despite allowing for a shorter absence from work.

### **Results**

In our medical practice half of the DC patients treated with enzymatic aponeurotomy do not have medical insurance and thus must fully cover all treatment-associated costs, surgical or otherwise. Forty three percent of patients work in the health care system, and have a better-than-average knowledge of treatment options available for their condition. Furthermore, all our treated patients are active professionals, who regard quick return to work as top priority.

### **Discussion**

Publications regarding treatment effectiveness and patient satisfaction are on the rise. Differences in results obtained among these publications arise from differences in defining the disease recurrence and the satisfactory therapeutic effect. Patient satisfaction is crucial in popularizing this treatment method. Bradley and Warwick (2016) reported satisfaction in 73% of treated patients while Witthaut puts that number at 71% (Bradley *et al.* 2016; Witthaut *et al.* 2013). Both authors use large cohorts to support their findings, 213 and 587 cases respectively. In 21% of cases patients were not satisfied with the procedure as a result of disappointing long-term effect, namely contracture recurrence within two years post treatment. The percentage of dissatisfied patients increases proportionately with time elapsed from

treatment, namely due to disease reoccurrence or its appearance in previously healthy areas of the palm. Nevertheless when interviewed three years after having undergone enzymatic aponeurotomy 75% of patients declared that they would seek enzymatic re-treatment in case of a relapse. Apart from obvious satisfaction with the treatment outcome, quick recovery of post-treatment limb function (judged by patients as satisfactory within four days post-procedure) and virtual lack of complications had a huge impact on overall patient satisfaction with this innovative method of treatment. Even those patients who have experienced minor side effects such as skin fissures and swelling still reported overall satisfaction with this non-surgical treatment option. In the enzyme treated group, 78 patients had previously undergone invasive (surgical) treatment for their condition. Only eight of them declared that they would seek surgical rather than enzymatic re-treatment in case of a relapse. Those preferring surgery based their decision on a subjectively better functional outcome following the original procedure.

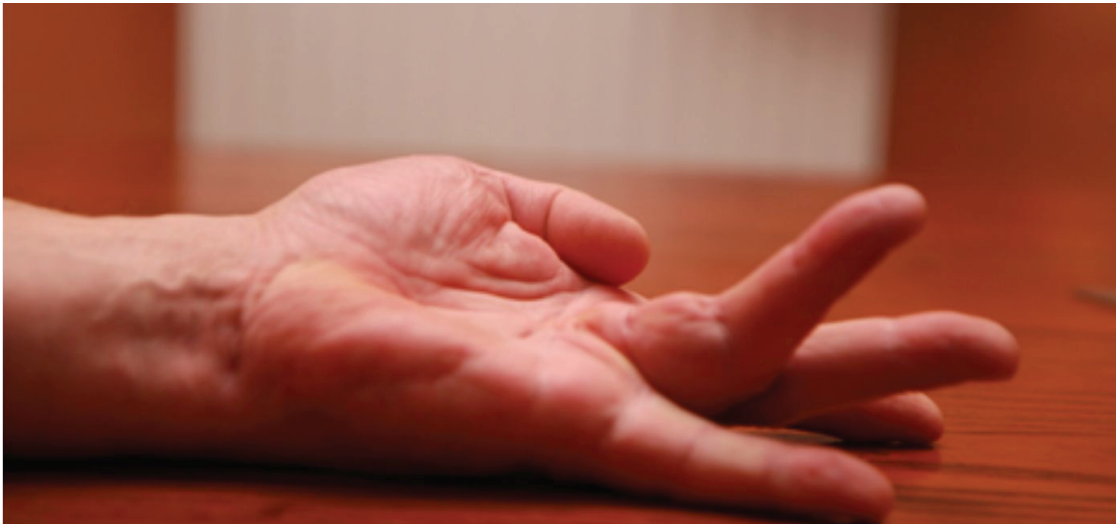
Long term outcomes of the enzymatic and surgical methods are comparable. Relapse at the metacarpophalangeal joint level is 27% and 40% after three and five years respectively (Bradley *et al.* 2016). Slightly worse outcomes are observed in treating contractures at the proximal interphalangeal (PIP) joint level (Clayton *et al.* 2015). Long term results of enzymatic aponeurotomy in DC treatment are comparable with invasive (surgical) treatment outcomes and significantly better than the non-invasive needle aponeurotomy (Stromberg *et al.* 2016). It appears that the reason for this may be due to an enzyme which causes significant reduction of pathological tissue volume, thus reducing the number of cells producing collagen type 6 as demonstrated by MRI of treated patients one month following enzyme injection (Moon *et al.* 2012). By comparison the non-invasive needle aponeurotomy (NA)

procedure lacerates (cuts) the fibrous cord of pathological tissue without reducing its volume. This appears to be the reason for frequent recurrence and poor long-term outcomes following treatment with NA.

Enzymatic aponeurotomy treatment outcome comparison in patients with Dupuytren's contracture 5 years following the procedure shows good effectiveness of collagenase injections with recurrence rate of 46% which is almost identical to results obtained following conventional surgical treatment. In both groups of patients relapses were more frequent in cases where treatment was administered at the level of the PIP joints. Furthermore the enzymatic approach generates far fewer complications compared to surgery. Practically no complications in the five years following enzymatic injection serves as a strong argument for the widespread use of this treatment modality (Stromberg *et al.* 2016; Moon *et al.* 2012). Additional advantage of this non-surgical option is patient satisfaction with the actual therapeutic process; there is no general anaesthesia, no hospitalization and contact with medical personnel is kept to a minimum (Figure 1–3).

### Conclusions

Further development of non-surgical collagenase administration for treatment for Dupuytren's contracture appears to depend solely on the financial factor. Ample scientific evidence combined with a good track record confirm medical safety of enzymatic aponeurotomy. Therefore, this treatment continues its steady development. It appears that the main obstacle for its widespread use in Poland may be the lack of public financing (medical coverage) as well as insufficient knowledge about this procedure among both the referring physicians and the DC treating specialists.



**Figure 1.** Patient's hand prior to the enzymatic aponeurotomy procedure.



**Figure 2.** Patient's hand 24-hours post enzyme administration.



**Figure 3.** Patient's hand four days post enzyme administration.

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