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## 注射器针头划拨法治疗儿童拇指狭窄性腱鞘炎的临床疗效及与病程的关系\*

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**摘要 目的:**探讨注射器针头划拨法治疗儿童拇指狭窄性腱鞘炎临床疗效,分析病程长短与治疗结果的相关性。**方法:**纳入 2015 年 4 月至 2018 年 10 月于我院治疗的拇指狭窄性腱鞘炎患儿 59 例,根据患儿发病时间分为短程组(发病时间 $\leq 6$  个月,  $n=28$ )和长程组(发病时间 $>6$  个月,  $n=31$ ),所有患儿采用 7# 注射器针头划拨法进行治疗,术后 1 个月及 6 个月门诊复查并评定临床疗效,观察记录是否残留屈曲挛缩,触发弹响感、主动屈伸拇指指间关节活动度改善情况及术后并发症情况,分析两组患儿病程与治疗结果相关性,记录术后随访结果。**结果:**短程组治疗有效率为 96.43%,长程组治疗有效率为 93.55%,两组有效率比较无统计学差异( $P>0.05$ )。术后 1 个月及 6 个月复查 56 例患儿均成功解除屈曲挛缩畸形,主动屈伸拇指指间关节活动度改善情况满意,触发激痛点消失,后续随访 6~46 个月未见复发,未愈的 3 例患儿经外科手术治疗后达到治愈效果。两组患儿病程长短与治疗结果不存在线性相关性( $P>0.05$ )。**结论:**注射器针头划拨法治疗儿童拇指狭窄性腱鞘炎临床疗效确切,治疗器械普通,创口小,简单易行,在治疗病程大于 6 个月的儿童拇指狭窄性腱鞘炎也能取得较满意的临床疗效。

**关键词:**注射器针头划拨法;儿童;拇指狭窄性腱鞘炎;疗效;病程

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## Clinical Effect of Syringe Needle Allocation Method in the Treatment of Stenosing Tenosynovitis of Thumb in Children and Its Relationship with the Course of Disease\*

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**ABSTRACT Objective:** To explore the clinical effect of syringe needle allocation method in the treatment of stenosing tenosynovitis of thumb in children, and to analyze the correlation between the course of the disease and the therapeutic effect. **Methods:** 59 cases of stenosing tenosynovitis of thumb treated in our hospital from April 2015 to October 2018, according to the time of onset, children were divided into short-term group (onset time less than 6 months,  $n=28$ ) and long-term group (onset time more than 6 months,  $n=31$ ). All children were treated with needle allocation method of 7# syringe, outpatient review and evaluation of clinical efficacy 1 month and 6 months after operation. To observe and record whether there were residual flexion contracture, trigger sensation, active flexion and extension of the thumb interphalangeal joint motion improvement and postoperative complications. The correlation between course of disease and therapeutic effect were compared between the two groups, and the results of follow-up after operation were recorded. **Results:** The effective rate of short-term group was 96.43%, and that of long-term group was 93.55%, there was no significant difference between the two groups ( $P>0.05$ ). 56 children were reexamined 1 month and 6 months after operation, and the flexion contracture deformity was successfully relieved, the activity of active flexion and extension of thumb interphalangeal joint was improved satisfactorily, the trigger pain point disappeared, no recurrence was observed during follow-up for 6 to 46 months, 3 cases of children who were not cured were cured after surgical treatment. There was no linear correlation between the duration of disease and therapeutic effect in two groups ( $P>0.05$ ). **Conclusion:** The syringe needle allocation method is effective in the treatment of stenosing tenosynovitis of thumb in children. It has the advantages of common instruments, small wounds and simple operation. It can also achieve satisfactory clinical effect in the treatment of stenosing tenosynovitis of thumb in children whose course of disease is more than 6 months.

**Key words:** Syringe needle allocation method; Children; Stenosing tenosynovitis of thumb; Curative effect; Course of disease

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## 前言

儿童拇指狭窄性腱鞘炎是儿童特有的获得性畸形,目前主要病因可能与拇指屈指肌腱紧张与拇长屈肌增大有关<sup>[1-3]</sup>。由于患儿家属经常不能及时发现病情或者未能引起足够的重视,长期屈曲挛缩造成掌指关节过伸半脱位,甚至影响拇指功能正常生长发育<sup>[4-6]</sup>。拇指狭窄性腱鞘炎有一定的自然史,目前认为一般在3岁左右进行手术不会对患儿造成负面影响,所以适当观察是合理的选择<sup>[7-9]</sup>。有研究报道,早期手术松解可以矫正儿童先天性扳机指畸形,恢复手指功能,但受麻醉方式、创口明显、易留瘢痕、手术时间、手术费用等因素影响,使其不为患儿家属首选<sup>[10-12]</sup>。近年来临床研究采用微创松解术治疗儿童拇指狭窄性腱鞘炎趋于流行,本研究旨在探讨采用7#注射器针头划拨法治疗儿童拇指狭窄性腱鞘炎的临床疗效,并初步分析病程与治疗效果相关性,现报告如下。

## 1 资料与方法

表1 两组患儿基线资料的比较

Table 1 Comparison of baseline data between two groups

| Groups                 | Gender |        | Age(years) | Location of disease |       |           | Preoperative flexion angle(°) |
|------------------------|--------|--------|------------|---------------------|-------|-----------|-------------------------------|
|                        | Male   | Female |            | Left                | Right | Bilateral |                               |
| Short-term group(n=28) | 13     | 15     | 6.50± 1.56 | 19                  | 7     | 2         | 33.93± 10.21                  |
| Long-term group(n=31)  | 17     | 14     | 6.61± 1.76 | 15                  | 11    | 5         | 35.10± 13.94                  |
| $\chi^2/t$             |        | 0.416  | 0.935      |                     | 2.499 |           | -0.243                        |
| <i>P</i>               |        | 0.519  | 0.350      |                     | 0.287 |           | 0.808                         |

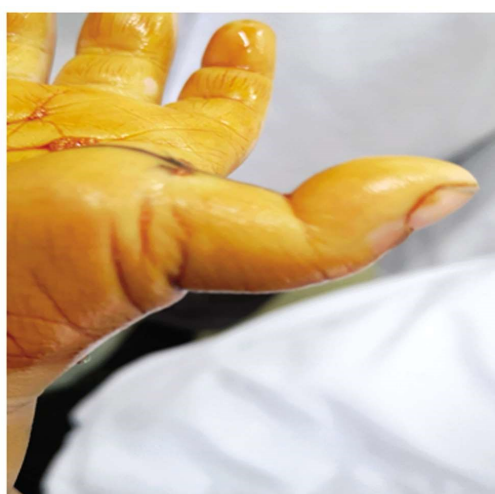
### 1.2 方法

体位与定点:在患儿家属辅助下抱坐位,患指平放于术者手掌上,应用量角器测量患侧术前屈曲畸形角度并记录。检查屈指肌腱鞘起始点,拇指为掌指关节横纹正中近缘,触及压痛、硬结及条索样肿胀,被动屈伸患指,触及硬结或条索的滑动轨迹,标记滑动轨迹正中。治疗方法:常规消毒后铺无菌单,伸展患指并固定。采用1%利多卡因0.5 mL进行局部麻醉,锐缘顺腱鞘方向,逐步浸润至腱鞘内的落空感后注药,使药液沿鞘管扩散,略停,待麻醉生效后,使用带7#针头的5 mL注射器

### 1.1 基线资料

纳入2015年4月至2018年10月于我院治疗的拇指狭窄性腱鞘炎患儿59例。根据患儿发病时间分为短程组(发病时间≤6个月)和长程组(发病时间>6个月)。其中短程组患儿28例,长程组患儿31例,两组患儿基线资料比较无统计学差异( $P>0.05$ ),具有可比性,见表1。诊断标准<sup>[13]</sup>:①发现患儿拇指屈曲畸形,伸直受限,或需借助外力伸直;②掌指关节局部的Notta结节,但无红肿、无压痛;③主动或者被动活动指间关节存在弹响声;④指间关节存在持续固定屈曲畸形。纳入标准:(1)符合上述诊断标准;(2)采用Sugimoto分期<sup>[14]</sup>纳入病情符合Ⅱ~Ⅳ期的患儿;(3)患儿年龄≥3岁;(4)患儿监护人同意参与本研究,签署治疗知情同意书。排除标准:(1)患儿发病年龄小于3岁,或发病年龄大于14岁;(2)拇指外伤性、化脓性疾病;(3)拇指骨性结构异常引起的屈曲畸形;(4)已行指夹板等保守干预治疗或手术治疗;(5)脱落病例。

(江西洪达,规格:0.7 mm×31 mm),针锐缘与针翼平行,定点处进针,被动屈伸患指,术针以进针点皮肤为支点,顺腱鞘方向,被动屈指间关节,与患指运动呈相反方向划动针尖,行针下挛缩腱鞘、A1滑车切割松解,针下空虚,再次被动屈伸患指关节滑利,无异响、无障碍,如松解效果不明显,可反复划拨3~4次,术毕松开后,患侧拇指指间关节可进行全范围被动屈伸运动。术毕,压迫针眼近端和远端鞘管,至无淤血、鞘液流出后敷料包扎,术后患指给予多层无菌敷料包扎于伸直位固定制动、术区忌水3天,见图1。



(1)Preoperative



(2)Immediate postoperative

图1 3岁5个月女童手术图片示例

Fig.1 An example of a 3 years and 5 months old girl's surgical image

### 1.3 观察指标

术后 2 天于我院复查拆除包扎敷料, 观察操作点有无红肿、渗液发生情况, 嘱患儿家属帮患儿被动屈伸患侧拇指指间关节, 并应用量角器测量术后拇指指间关节屈伸活动情况, 触摸有无掌指关节处结节。疗效判断标准如下<sup>[15]</sup>: 仅有轻度压痛, 手指屈伸活动正常为治愈; 有压痛、无弹响, 屈伸活动轻度受限为好转; 有弹响, 屈伸活动受限, 需主动或被动矫正为未愈。有效率 = 治愈率 + 好转率。术后 1 个月随访是否残留屈曲挛缩, 触发弹响感、主动屈伸拇指指间关节活动度改善情况。术后 6 个月再次评估并观察随访患侧拇指发育形态情况。观察并发症发生情况。比较两组患儿病程与治疗效果相关性, 并对两组患儿进行术后随访。

### 1.4 统计学方法

应用 SPSS 23.0 软件进行统计分析, 计量资料采用均数 $\pm$ 标准差和中位数  $M(P25, P75)$  描述, 满足正态性和方差齐性检验采用  $t$  检验, 不满足正态分布或方差不齐则采用秩和检验。计数资料采用例数和百分比描述, 比较采用卡方检验, 等级资

料比较采用秩和检验。相关性分析采用 Spearman 相关分析, 检验水准  $\alpha=0.05$ 。

## 2 结果

### 2.1 治疗效果与并发症

术后 1 个月, 两组治疗效果及有效率比较均无统计学差异 ( $P>0.05$ ), 见表 2。复查时, 56 例患儿均在划拨治疗后成功解除屈曲挛缩, 掌指关节处结节消失, 屈伸无弹响声, 术后无残留屈曲畸形; 9 例患儿复查拇指指间关节虽不能主动伸直度达  $0^\circ$ , 但指间关节屈伸改善角度明显, 嘱患儿家属每天 3~5 次, 每次协助患儿做拇指被动屈伸功能锻炼 1 分钟。

术后 6 个月, 两组治疗效果及有效率比较仍无统计学差异 ( $P>0.05$ ), 见表 3。复查时, 3 例患儿术后 1 个月复查主动屈伸拇指指间关节时仍有弹响感, 掌指关节局部结节仍可触及, 指间关节残留屈曲畸形仍存在, 建议患儿进一步行外科手术。两组患儿治疗局部针眼无感染、皮下组织萎缩及肌腱断裂等并发症。

表 2 两组患儿术后 1 个月治疗效果及有效率比较[n(%)]

Table 2 Comparison of curative effect and efficiency between two groups in 1 month after operation[n(%)]

| Groups                 | Cure      | Better   | Healed  | Efficiency |
|------------------------|-----------|----------|---------|------------|
| Short-term group(n=28) | 23(82.14) | 4(14.29) | 1(3.57) | 27(96.43)  |
| Long-term group(n=31)  | 24(77.42) | 5(16.13) | 2(6.45) | 29(93.55)  |
| Z(x <sup>2</sup> )     |           | 0.466    |         | (0.008)    |
| P                      |           | 0.641    |         | 0.928      |

表 3 两组患儿术后 6 个月治疗效果及有效率比较[n(%)]

Table 3 Comparison of curative effect and efficiency between two groups in 6 months after operation[n(%)]

| Groups                 | Cure      | Better  | Healed  | Efficiency |
|------------------------|-----------|---------|---------|------------|
| Short-term group(n=28) | 25(89.29) | 2(7.14) | 1(3.57) | 27(96.43)  |
| Long-term group(n=31)  | 26(83.87) | 3(9.68) | 2(6.45) | 29(93.55)  |
| Z(x <sup>2</sup> )     |           | 0.600   |         | (0.008)    |
| P                      |           | 0.549   |         | 0.928      |

### 2.2 病程与治疗效果的关联性

短程组病程中位数为 2.5 个月, 最长病程为 4.5 个月; 长程组病程中位数为 24 个月, 最长病程为 7 年。将术后 6 个月的治

疗效果进行量化(治愈 = 3, 好转 = 2, 未愈 = 1), 采用等级秩相关分析, Spearman 相关系数 = 0.116, 双侧  $P=0.382>0.05$ , 提示病程与治疗效果之间不存在直线相关关系。见表 4。

表 4 两组患儿病程与术后 6 个月治疗效果相关性比较

Table 4 Comparisons between the course of disease and the effect of 6 months after operation in two groups

| Groups                 | Course of disease<br>(months) | Curative effect in 6 months after operation |        |        | Course of disease vs<br>curative effect |
|------------------------|-------------------------------|---------------------------------------------|--------|--------|-----------------------------------------|
|                        | M(P25, P75)                   | Cure                                        | Better | Healed | r, P                                    |
| Short-term group(n=28) | 2.5(1, 4.5)                   | 25                                          | 2      | 1      | 0.116, 0.382                            |
| Long-term group(n=31)  | 24(8, 84)                     | 26                                          | 3      | 2      |                                         |
| Z                      | 4.107                         |                                             | 0.600  |        |                                         |
| P                      | 0.000                         |                                             | 0.549  |        |                                         |

### 2.3 术后随访

两组患儿在术后随访 6~46 个月,随访时间中位数 19 个月,56 例患儿均在划拨治疗后成功解除屈曲畸形,掌指关节处结节消失,没有复发性关节卡压或弹响声/感再次出现,无指间关节残留屈曲挛缩,在日常生活及游戏活动中没有出现拇指屈伸功能限制,未愈的 3 例患儿经外科手术治疗后达到治愈效果。

### 3 讨论

儿童拇指狭窄性腱鞘炎存在自然恢复病史<sup>[16,17]</sup>,Baek GH<sup>[18]</sup> 研究报道显示,在平均 48 个月的随访中,60%以上的患儿拇指触发拇解锁;继续随访未愈的患儿在平均随访 87 个月时,75.9%的扳机拇解锁。目前我们可以应用于发病年龄小于 3 岁且 Sugimoto 分期为 II 期以下的患儿建议门诊观察随访,可以推迟或避免早期进行手术<sup>[19,20]</sup>。本研究选择发病年龄在 3 岁以上的拇指狭窄性腱鞘炎患儿,对于病程与治疗效果进行相关性分析,得出两因素之间不存在直线相关性,进而可推断病程长短不会影响注射器针头划拨法治疗儿童拇指狭窄性腱鞘炎的治疗效果。结合两组患儿术后 1 个月和术后 6 个月的治疗效果组间比较,注射器针头划拨法在治疗病程大于 6 个月的儿童拇指狭窄性腱鞘炎的也能达到比较满意的临床疗效。

目前儿童拇指狭窄性腱鞘炎行外科手术切开治疗是公认的治疗金标准<sup>[21]</sup>,松解第一环形 A1 滑车,同时需要同时松解远端 A3 滑车,但目前大多数患儿家属因全麻麻醉、术后局部切口瘢痕、住院周期及治疗费用等多种因素仍不能接受外科手术,故近年关于儿童拇指狭窄性腱鞘炎的微创治疗研究有所增加<sup>[22,23]</sup>。李瑞琦<sup>[24]</sup>等人的研究表明,自制“镰刀状”小针刀微创治疗小儿拇指屈肌腱狭窄性腱鞘炎具有治愈率高、创伤小、费用低、操作简单等特点;叶晓晶<sup>[25]</sup>等人的研究证实小针刀微创治疗儿童拇指屈肌腱狭窄性腱鞘炎临床疗效满意;王易彬<sup>[26]</sup>等人的研究表明,经超声引导下通过环线切割微创技术进行儿童拇长屈肌腱狭窄性腱鞘的松解临床疗效良好。本研究特点在于采用治疗的器械即普通 7# 注射器针头,器械普通便宜,操作点掌指关节横纹正中,创面微小易愈合,是患儿家属更容易接受的治疗方式。本研究结果显示,短程组治疗有效率为 96.43%,长程组治疗有效率为 93.55%,表明注射器针头划拨法治疗儿童拇指狭窄性腱鞘炎临床疗效确切,注射器针头划拨法治疗器械普通,创口小且愈合良好,局麻处理,简单易行。

本研究目前使用注射器针头划拨,在相对于外科手术切开治疗,无法良好显露局部,加之患儿局麻下多处于哭闹好动状态,对于术者操作技术提出很高要求<sup>[27]</sup>。划拨深度的掌握不慎都会造成患指神经血管损伤,可能伤及拇指屈肌肌腱、神经及血管结构,进行操作应谨慎<sup>[28,29]</sup>。近年来儿童肌骨超声应用发展迅速,朱云开<sup>[30]</sup>研究报道了 71 例拇指扳机指的患儿行超声检查,证实儿童扳机指超声表现为患侧拇长屈肌肌腱在掌指关节处明显增粗,伴有 A1 滑车增厚。故后期本研究会加入超声引导进行大样本的临床研究及随访周期更长的回顾性研究,以期给予儿童拇指狭窄性腱鞘炎的微创治疗提供综合治疗手段。此外本研究术后 1 个月复查治疗效果好转的 9 例患儿中,后期嘱患儿家属协助开展指间关节主被动功能锻炼,在术后 6 个月的复查中有 4 例患儿治疗效果达治愈,表明治疗后的功能锻炼也是影响因素,后期会纳入开展多因素相关性分析研究。

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