

# Management of postaxial polydactyly by “Ksharsutra”: A minimally invasive Ayurvedic parasurgical procedure

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## ABSTRACT

Polydactyly is a most common congenital hand defects in which the hand has one or more extra fingers, commonly seen postaxial, that is, on the small finger side. It is usually treated by surgically removing the extra finger typically, when the child is between 1 and 2 years old. Prognosis after removal of extra digit is good if it occurs in isolation though not devoid of complications like scar formation, stiffness, instability, and late deformity which may need additional reconstructive surgery to recover full function and improve the hand's appearance. I have used “Ksharsutra,” an Ayurvedic-medicated thread coated with herbal alkaline drugs having simultaneous cutting and healing property, to remove extra finger in a child, whose parents were not willing to undergo surgery and asked for alternative treatment. “Ksharsutra ligation” showed excellent result in postaxial polydactyly. The extra finger started necrosing within 24 hours and sloughed out in just 9 days with minimal scar formation. After observing the prognosis, I believe that more cases should be done to establish and promote this unique parasurgical procedure, “Ksharsutra” in the management of polydactyly.

**Key words:** Ksharsutra, polydactyly, polydactyly surgery, postaxial polydactyly surgery

## INTRODUCTION

Polydactyly or hyperdactyly is a most common congenital hand defects in which the hand has one or more extra fingers. The extra digit is usually a small piece of soft tissue; however, it may contain bone without joints; rarely may it be a complete, functioning digit. The extra digit is presented as postaxial (little finger), preaxial (thumb), and central (ring, middle, index fingers) polydactyly. The polydactyly is most common on the ulnar (little finger) side of the hand.<sup>[1]</sup>

It can occur by itself, or more commonly, as one feature

of a syndrome of congenital anomalies. When it occurs by itself, it is associated with autosomal dominant mutations in single genes.

The condition has an incidence of 1 in every 500 live births. Postaxial hand polydactyly is approximately 10 times more frequent in blacks than in whites and is more frequent in male children.<sup>[2]</sup>

The established treatment for polydactyly is the surgical removal of the extra finger, when the child is between 1 and 2 years old. However, few patients may require complex surgical procedure involving bone, ligament, and tendon. Prognosis after removal of extra digit is good if it occurs in isolation though not devoid of complications like scar formation, stiffness, instability, and late deformity which may need additional reconstructive surgery to recover full function and improve the hand's appearance.<sup>[3]</sup>

## Ayurvedic prospective

Polydactyly can be considered as “Beej dosh janya vikar” (genomic disease) and named as “Sabaj adbi-anguli” meaning extra digit present by birth.

## About Ksharsutra

“Ksharsutra” is a medicated device or an Ayurvedic cutting seton (coated thread) prepared by repeated smearing

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of *Apamarga Kshar* (alkali of *Achyranthes aspera* plant), *Snuhi Kshir* (latex of *Euphorbia nerifolia*), and *Haridra* powder (*Curcuma longa*) on a 20 zero Barber's surgical linen thread.<sup>[4]</sup> *Ksharsutra* material, possess proteolysis, caustic, and antiseptic properties and promotes simultaneous cutting and healing.<sup>[5]</sup>

"*Ksharsutra*" is mainly employed in Fistula-in-ano (*Bhagandar*), it can be used in other conditions like pedunculated growth, polyps, external piles, and so on as it posses caustic properties resulting in chemical excision of unwanted tissues.<sup>[6]</sup>

The most unique quality of this magic thread, that is, "*Ksharsutra*" is simultaneous cutting and healing property.

### CASE REPORT

#### Aim and objective of case study

1. To evaluate clinical efficacy of "*Ksharsutra*" in the management of "Postaxial Polydactyly"
2. Refining parasurgical procedure (*Ksharsutra* therapy).

#### Type of study

An observation study (case report).

#### Study center

Dr. DY Patil Ayurvedic Hospital, Nerul, Navi Mumbai, Maharashtra, India.

#### Study details

The patient was 18 months boy who was brought to surgery out patient department.

#### Chief complaint and its duration

Extra finger on the small finger, on both sides-Since birth.

#### Brief history

A male baby brought in surgery out patient department (SOPD) with bilateral postaxial polydactyly (extra finger) since birth. Parents were not willing to undergo surgery due to fear of complication and their orthodox belief considering the evidence of polydactyly related with devine phenomenon. They were anxious to go for Ayurvedic surgical treatment.

#### General examination

All vital parameters were within normal limits. Patient was hemodynamically stable.

Hemoglobin-12.5 mg%, RBS-90 mg/dL, X-ray (AP/LAT)-Revealed bilateral postaxial polydactyly.

#### Local examination

1. Inspection:

Site-Extra finger on the small finger (ulnar) side on both hands

2. Palpation:

Consistency-Soft, movable (free)

No tenderness, cartilaginous appearance.

#### Diagnosis

Bilateral postaxial polydactyly.

#### Treatment plan

As parents denied for surgery and were anxious to go for ayurvedic surgical treatment for their child, I decided to do "*Ksharsutra*" procedure for removal of bilateral postaxial polydactyly under local anesthesia. All routine blood investigation was done prior to "*Ksharsutra*" treatment. Injection lignocaine 2% infiltrated (locally) around the base of extra fingers on both the side. Then, skin around base was incised with the help of cuticular scissor to facilitate firm ligation and finally, "*Ksharsutra*" was applied by free ligation method.

#### Postoperative management

After "*Ksharsutra*" procedure "*Yashtimadhu Ghris*" was applied and parents were advised not to apply water on the operative site of the child. Also, syrup brufen (100 mg) was prescribed internally for 3 days and patient was asked to visit SOPD daily for follow-up.

#### OBSERVATION AND RESULT

The efficacy of therapy was assessed during the follow up in surgery out patient department and noted in the Case Record Form. After "*Ksharsutra* Ligation," there was significant pain probably due to compromised blood supply to the extra finger which was managed by oral analgesic drug (syrup brufen). Local temperature rose on day 1 and reduced in due course of time (within 48 h). Mild swelling was observed till day 3 and the color of extra finger changed from reddish to black in 9 days. There was no evident pus formation at all during the recovery phase. Finally, the extra fingers sloughed out on day 9 with minimal scar and thus, patient was cured [Table 1].

#### DISCUSSION

"*Ksharsutra* Ligation" showed excellent result in postaxial polydactyly. The extra finger started necrosing within 24 hours and sloughed out in just 9 days with minimal scar formation [Figure 1].

The incision taken on skin at the base of extra finger before

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Figure 1: Complete recovery phase with Ksharsutra procedure

ligation of *Ksharsutra* was just to facilitate firm grip of thread. Also, by doing so, even the duration of treatment has been reduced. Further, to evaluate the advantage of *Ksharsutra* ligation over linen ligation in the management of postaxial polydactyly, I ligated one side extra finger with *Ksharsutra* and the other with linen thread. During the postprocedure follow-up, I found that extra digit ligated with simple linen was swollen with perfusion of fluid under skin noted without change in color of the finger. Also, Postoperative pain was more compared to the *Ksharsutra*-ligated finger. On the contrary, the extra digit which was ligated with *Ksharsutra* was turned purple, bluish, to black within a week time. Similarly, there was no pain, swelling after 3 days of *Ksharsutra* ligation. The extra finger ligated with *Ksharsutra* sloughed out by its own on day 9, whereas the finger ligated with linen was only partially separated and finally, I excised it with scissor under local anesthesia on day 9 to relieve discomfort to the patient.

The comparative prognosis observation revealed that there was a definite benefit of *Ksharsutra* ligation over ligation with linen thread in the management of postaxial polydactyly.

Table 1: Observation after "Ksharsutra" procedure

Sign and symptom	Day 1	Day 3	Day 6	Day 9
Post operative pain	++	+	+	0
Local temperature	++	+	0	0
Swelling	+	+	0	0
Color changes	Reddish	Purple	Bluish	Black
Pus formation	0	0	0	0
Pilling off or desloughing process	No	No	Partial	Complete

However, more cases should be done to establish and promote this unique parasurgical procedure, that is, "*Ksharsutra*" in the management of postaxial polydactyly.

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