

# Surgical Realignment Of Penile Suspensory Ligament in Peno-Scrotal Hypospadias Has Better Cosmetic And Functional Outcomes.

ASHISH PARDESHI\*, PUNE, India; VIJAY RAGHOJI, NAVNATH FULARI, Solapur, India; PRATIKSHIT MAHAJAN, Nasik, India; Rajesh Rajendran, Trichy, India

**INTRODUCTION AND OBJECTIVES:** Proximal hypospadias is a complex anatomical deformity of the male external genitalia. The Penile Suspensory Ligament (PSL) is an important structure, which defines the peno-scrotal orientation. Abnormal anatomy of PSL leads to an abnormal peno-scrotal orientation and penile shortening. The correction of this abnormal ligament forms the basis of better restoration of peno-scrotal anatomy. We tried to understand the distorted anatomy of the PSL in peno-scrotal Hypospadias and to assess the effect of its surgical realignment in complex proximal hypospadias.

**METHODS:** 17 patients of peno-scrotal Hypospadias, between the ages of 5 to 29 years (mean age 8.46 years) were studied from June 2013 to May 2017. 12 patients had no surgical intervention before and 5 were operated previously. All non-operated patients had significant chordee and 2 of the 5 operated patients had residual chordee. All patients had an over-riding bifid scrotum with shortening of the phallus. The surgical steps included: Penile degloving, scrotal exploration, identification of the abnormal attachments of the PSL, release of testes and cord from the abnormally placed PSL, isolation of both PSL and midline realignment and repair of the ligaments with fixation to the penile shaft.

**RESULTS:** Penile Length increased by an average of 18.45% to that of the pre-op length in all patients. All patients had undivided round scrotum. All patients had correct orientation of penis and scrotum. Favorable results:  
 1) Correction of Peno-scrotal transposition  
 2) Increased Penile length  
 3) Pendulous scrotum  
 4) Correction of Bifid scrotum  
 5) Correction of Peno-pubic angle during erection

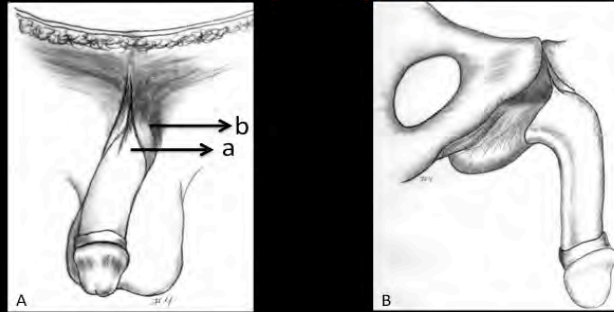
**CONCLUSIONS:** The PSL has 2 parts. The suspensory ligament proper bridges the symphysis pubis and the tunica albuginea of the corpora cavernosa. The fundiform ligament consists of the dartos facial fibers extending from Scarpa's fascia of the abdomen onto the penile shaft. Deeper, elaborate dissection in cases of complex peno-scrotal hypospadias shows abnormal anatomy of the penile suspensory ligaments. This is responsible for abnormal peno-scrotal orientation, buried penis, cleaved and plastered scrotum. Realignment of the PSL is essential for restoration of peno-scrotal anatomy and offers better cosmetic and functional results.

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 Contact Author, Dr. Ashish Pardeshi:  
 9822191175  
 pardeshiashish@gmail.com

## NORMAL ANATOMY OF PSL

### Penile Suspensory Ligament (PSL)



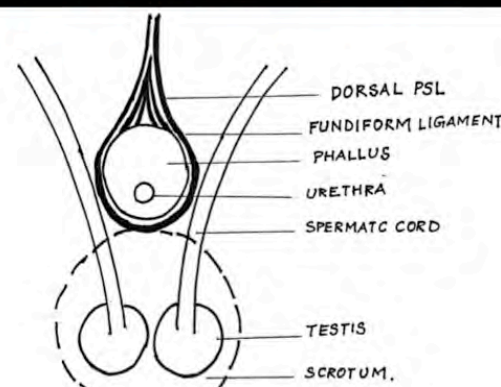
(A) The two units of the penile ligament of the penis.  
 a, suspensory ligament of the penis;  
 b, fundiform ligament (ligament of Luschka).  
 (B) The sling-like support of the fundiform ligament.

### Penile Suspensory Ligament (PSL)

- A 3-unit structure fixed to the front of the symphysis pubis:
  - Attached to the midline of the penile root rises from the linea alba and contains mostly elastic fibers. Named the *suspensory ligament of the penis*, it provides dorsal support to the penis.
  - Named the *fundiform ligament* or *ligament of Luschka*, and provides a sling-like ventral support to the penis. It is superficial and not adherent to the tunica albuginea.
  - Arcuate Sub-pubic ligament: runs a similar course to the suspensory ligament proper, it is a slightly denser ligamentous structure and lies further posteriorly.

Lupu NP, Gillespie L. Perineal approach to the penile suspensory ligament during urethroplasty. *J Urol* 1981; 125: 504-5.

### Normal PSL Anatomy Normal Peno-scrotal Orientation



## VARIATION IN PROXIMAL HYPOSPADIAS

### Anatomical effects of anomalous PSL in Complex Hypospadias

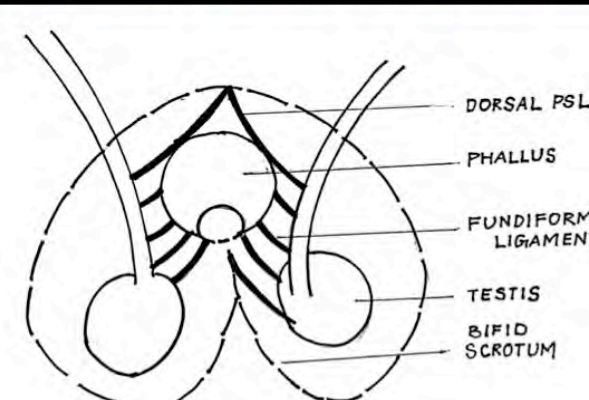


Plastered Scrotum Peno-scrotal Transposition Bifid Scrotum

### Anatomical results of anomalous PSL in Complex Hypospadias

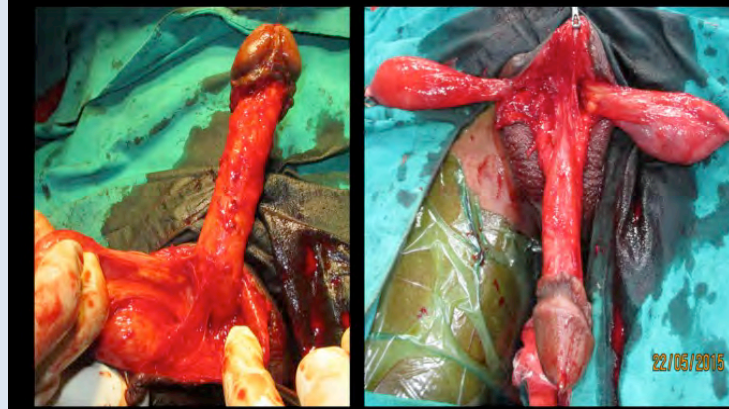


### Anomalous PSL Anatomy Anomalous Peno-scrotal Orientation



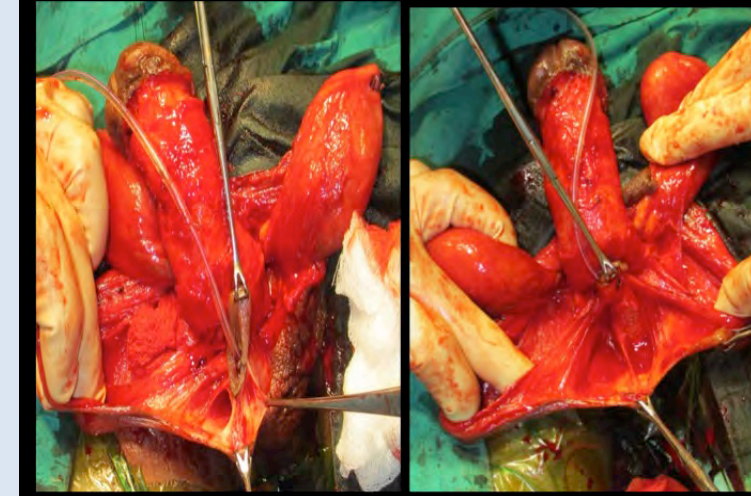
## SURGICAL RE-ALIGNMENT

### Fundiform Ligament Repair-Steps

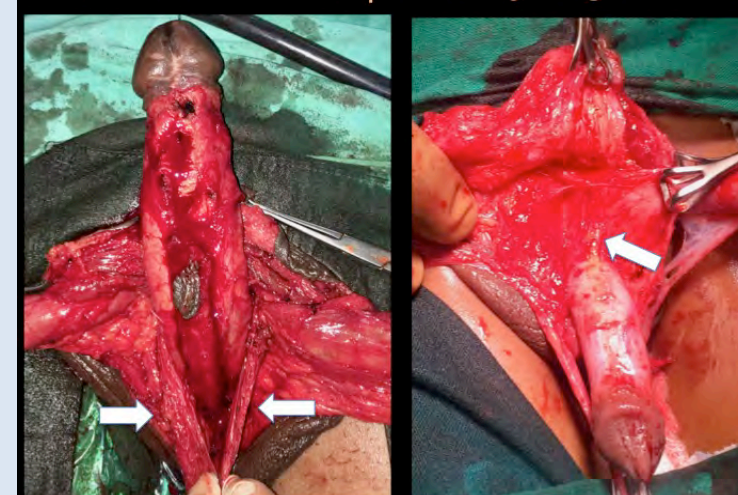


Penile Degloving Complete release of testes & Spermatic cords. Separation of Suspensory Ligament & Skin

### Anomalous attachment of Fundiform Ligament



### Release of Suspensory Ligaments



## FINAL RESULT POST REALIGNMENT

### Difference after repair



### Result of Re-Alignment of PSL



### Results of Fundiform Ligament repair

- Correction of Peno-scrotal transposition
- Increased Penile length
- Pendulous scrotum
- Correction of Bifid scrotum
- Correction of Peno-pubic angle during erection