



Umbilicoplasty

5 min talk

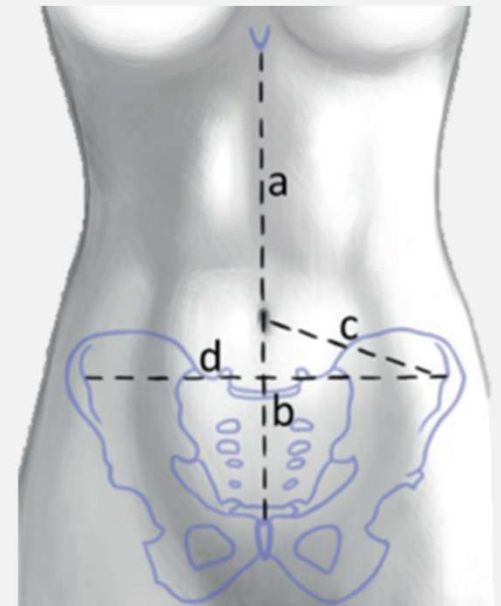
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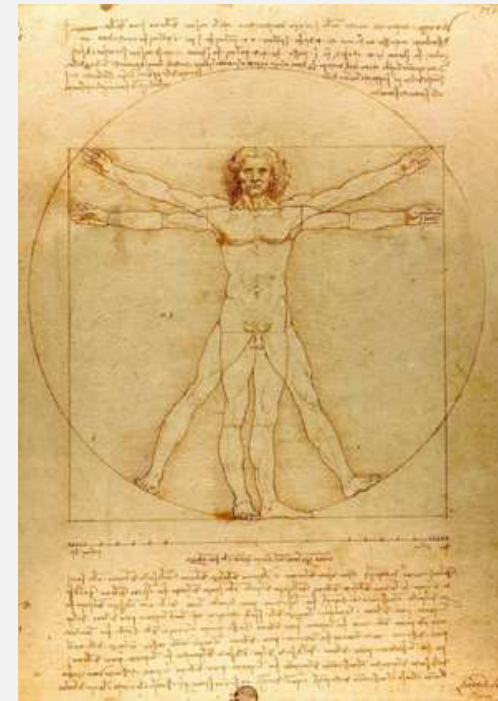
Anatomy of umbilicus

- Scar left when umbilical stump falls off in 5-15 days
- unique to each individual due to its being a scar
 - Position is relatively constant (ileac crest, midline)
 - Contains cord remnant (tip) and umbilical collar (ring)
 - All layers are fused at umbilicus, subcutaneous fat at margins cause depression



Significance of the umbilicus

- **Essential esthetic feature** (loss causes psychological distress)
 - symbolic values assigned to it by different cultures
 - Clinically used to separate the abdomen into quadrants
 - Recommended site of incision for various surgeries
- *must be preserved to maintain a good result after a surgery*
- *Umbilicoplasty may be done to modify appearance*



Indications for umbilicoplasty

- **Omphalocele**.... Defect in umbilicus, overlying cord
- **Gastroschisis**...splayed cord attached to left margin
- **Exstrophy**....abnormally positioned umbilicus (low)
- **Umbilical hernia**... distorted umbilicus post repair (large ring, flattening)
- **Urachal pathology**... umbilicus sacrificed



Without umbilicoplasty...



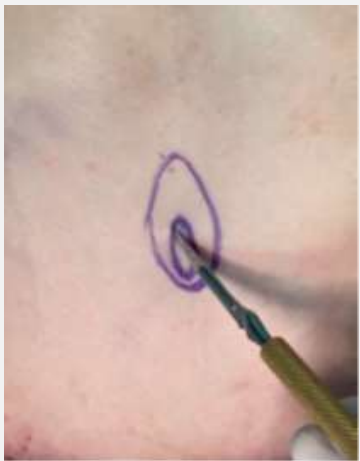
- **Abdominal wall closure...reconstruction remains incomplete without the umbilicus**
- **Repair of large hernia...excess skin becomes a problem**



Umbilicoplasty techniques

- Many techniques are described in the literature to perform an umbilicoplasty
 - **Suture fixation** methods
 - **Local flap** methods
- *One should utilize the technique with which they feel most comfortable, as none has been shown to be superior to the other.*

Suture fixation methods

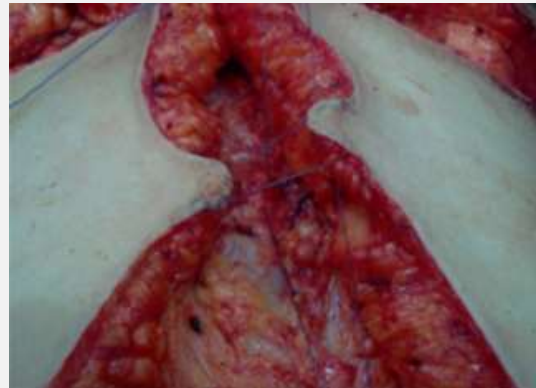


- **Circular skin is defatted and tacked to fascia**

Kajikawa A, Ueda K, Suzuki Y, Ohkouchi M. A new umbilicoplasty for children: creating a longitudinal deep umbilical depression. *Br J Plast Surg.* 2004;57:741–8.



Flap methods



- **Flaps transition with the skin in a curvilinear path and not in an angle. Dermis of the flaps is sutured together reaching also aponeurosis in median line.**

Franco D, Medeiros J, Farias C, Franco T. Umbilical reconstruction for patients with a midline scar. *Aesthetic Plast Surg.* 2006;30:595–8.



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1- Umbilicoplasty in omphalocele



Double purse-string suture



- Circular skin defect may be closed with an intradermal purse-string suture that is incorporated into the middle of the fascial closure. A second outer purse string suture is tied loosely subsequently to produce the umbilical ring.

Gera P, Henry G. Eur. Double purse string makes a nice umbilical ring: a novel technique for umbilicoplasty. J Paediatr Surg. 2013;23;164–6.



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2- Umbilicoplasty in gastroschisis

Using natural spontaneous fascial contracture



- Umbilical cord “bottle-top” capping for umbilical port closure. *May be slightly wider diameter but is flat and soft without a hernia sac*

Bowen J, Wilcox D, Bianchi A, Bruce J, Dickson A. The umbilicus in gastroschisis: aesthetic considerations. *Pediatr Surg Int.* 1996;11(4):237–9.



Placement of a stoma at the umbilical port



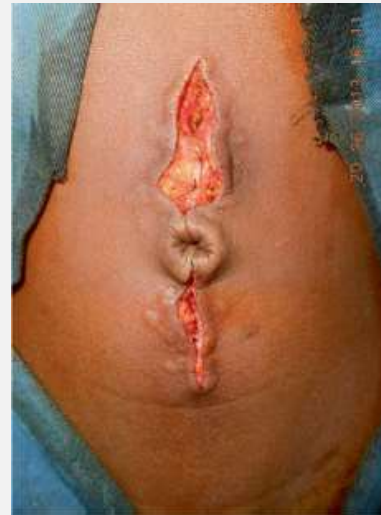
- Subsequent laparotomy leaves acceptable umbilicus *but less aesthetic*

Bowen J, Wilcox D, Bianchi A, Bruce J, Dickson A. The umbilicus in gastroschisis: aesthetic considerations. *Pediatr Surg Int.* 1996;11(4):237–9.



3- Umbilicoplasty in umbilical hernia

Large hernia: Lateral flaps



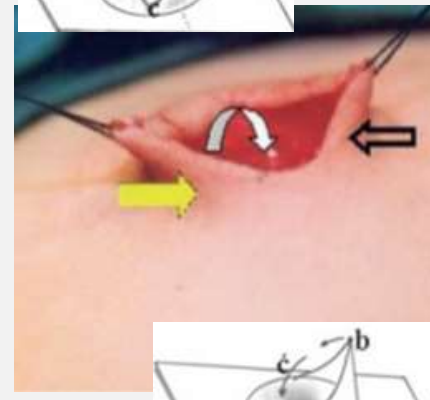
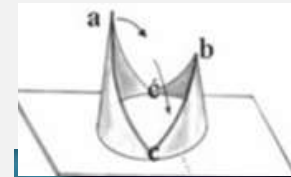
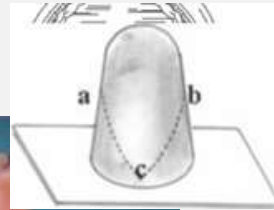
- Drawing flap. Liberation of the lateral flaps from aponeurosis plane. The flaps are sutured one to the other and fixed by two points to the aponeurosis plane. Their sides are sutured by subcutaneous separated 4/0 absorbable suture from depth to surface.

Akakpo-Numado GK, Mihluedo-Agbolan KA, Boume MA, Adabra K, Gnassingbe K, Tekou H. Umbilicoplasty in children with huge umbilical hernia. *Afr J Paediatr Surg.* 2014;11:256–60.



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Proboscoid hernia: Double half cone flap



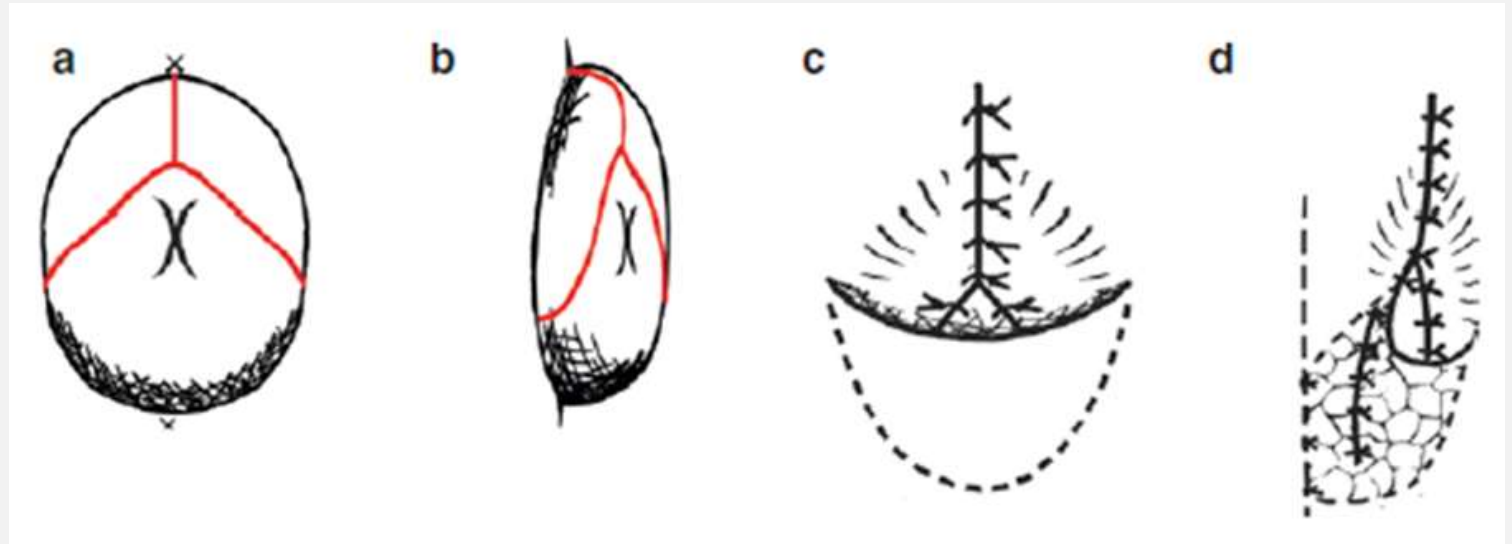
- Two unequal half-cone skin flaps. Inversion of one cone over the other

ElDessouki NI, Shehata SM, Torki AM, Hashish AA. Double half cone flap umbilicoplasty: a new technique for the proboscoid umbilical hernia in children. *Hernia*. 2004;8(3):182-5.



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Protrusion: V–Y advancement flap



- to form a deep umbilical depression

Blanchard H, St-Vil D, Carceller A, Bensoussan AL, Di Lorenzo M. Repair of the huge umbilical hernia in black children. *J Pediatr Surg.* 2000;35(5):696–8.



Protrusion: Flap with S-shaped incision

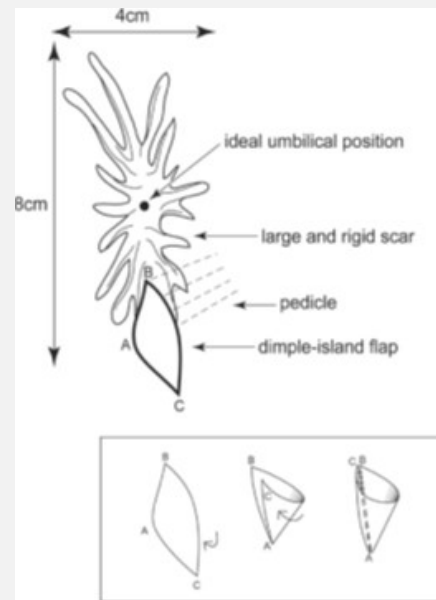


- imaging a square over the umbilical region and design s shaped incision. The flaps are sutured together to make a skin pouch. skin pouch was turned inside out and sutured along the linea alba. long and deep umbilical depression

Kajikawa A, Ueda K, Suzuki Y, Ohkouchi M. A new umbilicoplasty for children: creating a longitudinal deep umbilical depression. Br J Plast Surg. 2004;57:741–8.



Scar: local Flap



- island subcutaneous/skin flap folded into a cone

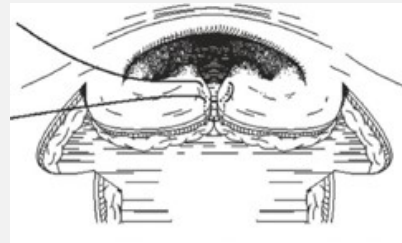
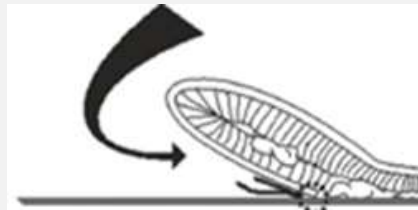
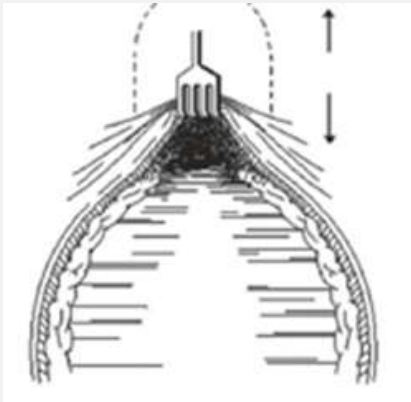
Kakudo N, Kusumoto K, Fujimori S, Shimotsuma A, Ogawa Y. Reconstruction of a natural-appearing umbilicus using an island flap: case report. *J Plast Reconstr Aesthet Surg.* 2006;59(9):999–1002.





4- Umbilicoplasty in exstrophy

“Manchester umbilicoplasty”



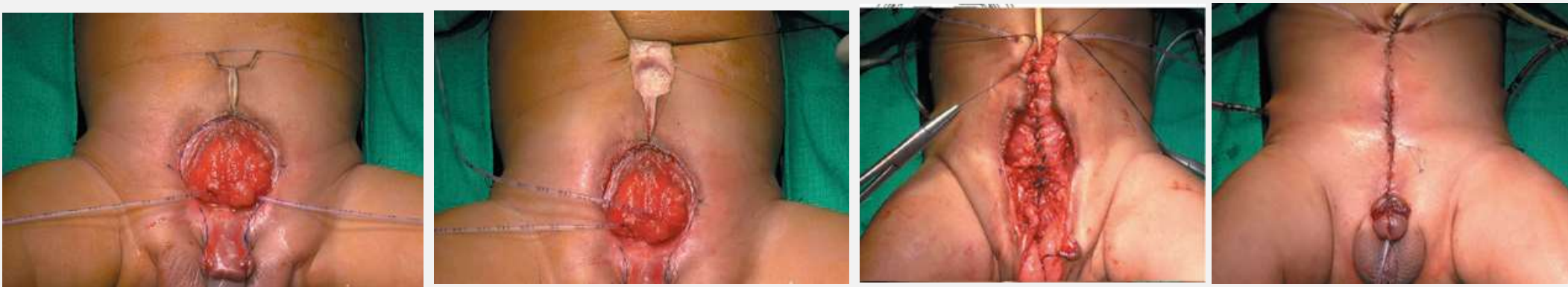
- apex of vertical midline wound is elevated off the anterior rectus sheath for 3–5 cm superiorly. It is sutured to the linea alba at as high point as possible, thereby inverting. Two 1.0 × 0.5 cm skin flaps based superiorly are cut from the margin of the inverted skin, rotated medial and sutured to form the base of the new umbilicus.

Cervellione RM, Kyriazis I, Dickson AP. Construction of a naturally looking inverted umbilicus for bladder exstrophy. J Urol. 2008;180:1869–72.



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Tubularized Trapezoid Flap



- trapezoid-shaped incision for umbilicoplasty keeping the ratio of width and length to 3:1. flap tubularized over the vesicostomy catheter without making any attempt to create dimple or fascial anchoring

Kureel SN, Rashid KA, Rawat J. Tubularized trapezoid flap neoumbilicoplasty--simple technique for umbilical reconstruction in bladder exstrophy. *Urology*. 2009;73(1):70-3.

Tubularized U shaped Flap



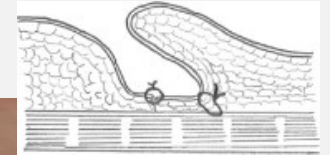
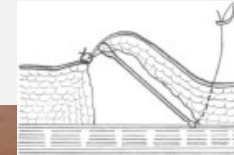
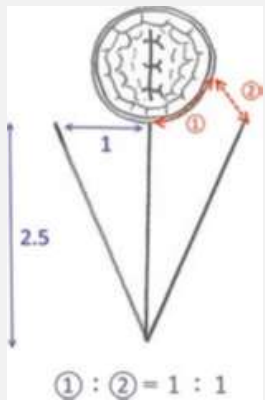
- U shaped incision. Flap tubularized around stent. Apex sutured to linea

Pinto PA, Stock JA, Hanna MK. Results of umbilicoplasty for bladder exstrophy. J Urol. 2000;164:2055-7..



6- Umbilicoplasty in urachal pathology

Triangular flaps



- two triangular flaps are designed just caudal to the umbilical defect, which is usually circular. Each flap is rotated, sutured to the other and anchored to the fascia. Flap is sutured to umbilical defect. Dog ears creates the illusion of deep umbilical fossa.

Omori M, Hashikawa K, Sakakibara S, Terashi H, Tahara S, Shibaoka Y, Kimura K, Sano K.
One-stage umbilicus reconstruction after resection of urachal cyst. *Ann Plast Surg.*2013;71(1):93–5.



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Three step technique



- Y-shaped wound left after circular incision around umbilicus extending midline used to resect urachal remnant. Central flap is mobilized and fixed as cranial as possible. redundant skin on the left and right is resected and sutured directly to edges of the flap. Closure of abdominal wall follows

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Thank You !

