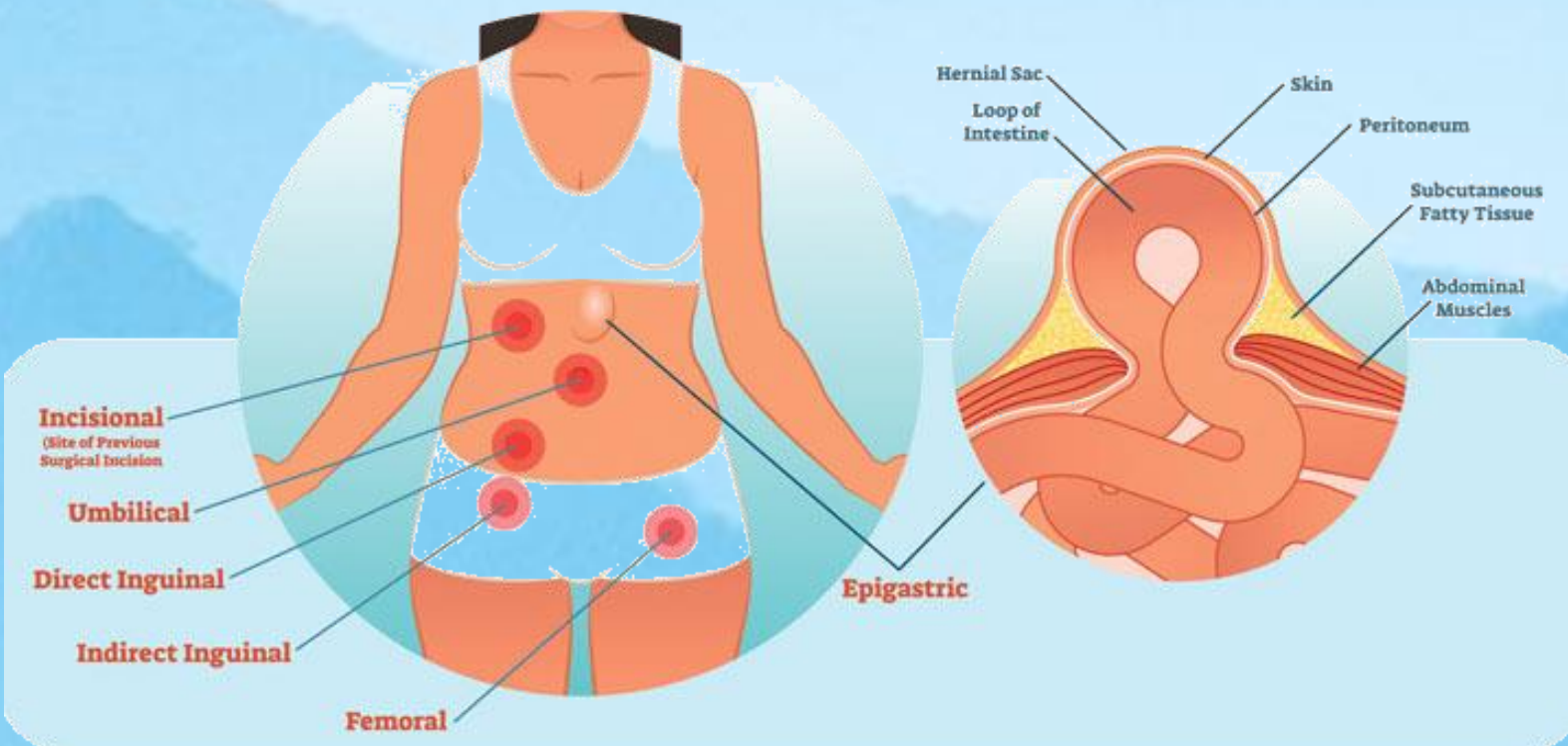


Usage of Surgicoll-Mesh®



FOR THE TREATMENT OF HERNIA



ADVANCED BIOTECH PRODUCTS (P) LTD.

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Under the technology from:



Fremont, CA, USA

ABOUT SURGICOLL-MESH

Surgicoll-Mesh, an innovative, high purity Type-I collagen has the following description and unique features:

1. High functional efficiency.
2. Its bioactivity is further enhanced by phosphorylation.
3. High degree of wound healing and tissue regenerative features.
4. Evidenced by equivalent Product approved in the US market.
5. US Patented for its purity and clinical efficacy^{1,2}.
6. Prepared using USP/IP, WHO GMP standards with ISO 13485:2016 regulations for quality compliances.

Indications of Surgicoll-Mesh

- Intra Oral Surgical - Post-operative mucosal defect in oral cancer and pre-cancerous lesions, dental/OMF applications.
- Soft Tissue & Muscle Flap Reinforcement – As a patch used for suture line reinforcement, muscle supplement with sling, repair and anchorage of tendon damage, and Transverse Rectus Abdominis Muscle (TRAM) flap procedures.
- Chronic ulcers and Diabetic ulcer treatment.
- Third-Degree Burn to accommodate the Skin Graft needs
- Orthopedic Surgery - Osteochondral resurfacing, synovial tissue implant, repair of rotator cuff, patellar, Achilles, biceps, quadriceps and other tendons.
- Cartilage Regeneration.
- Pelvic floor reconstruction, sacro-colposuspension and urethral sling.
- Colo-rectal, urethral & vaginal prolapse.
- Hernia repair including abdominal, inguinal, femoral, diaphragmatic, scrotal, umbilical, and incisional hernias.
- Cardio-vascular - Atrial, ventricular and arterial patch repair, suture line buttress, intra-cardiac patch, thoracic wall etc.
- Neurosurgical - As a substitute for dura repair and nerve wrap.

Advantage of using Surgicoll-Mesh:

- **High purity Type-I Collagen:** Surgicoll-Mesh consists of native un-crosslinked pure Type-I collagen (>97% pure) free of immunogenic proteins, lipids, and elastin^{3,4}.
- **Faster Healing:** Collagen phosphorylation attracts cells, regenerates tissue, and stimulates blood capillaries/granulation within 4 to 5 days⁵.
- **Innovative Technology:** Better than intact tissue-based membranes which contain 10 to 51% elastin and other immunogenic molecules.
- **Easy Application:** No washing needed prior to use. Can be Sutured and/or stapled.
- **Pain Control:** Effectively reduces pain
- **Various Sizes:** Choose from our available wide range of standard sizes. For more details, [see Brochure](#).
- **Cost-Effective:** Accelerated wound healing and tissue remodeling with minimal applications.

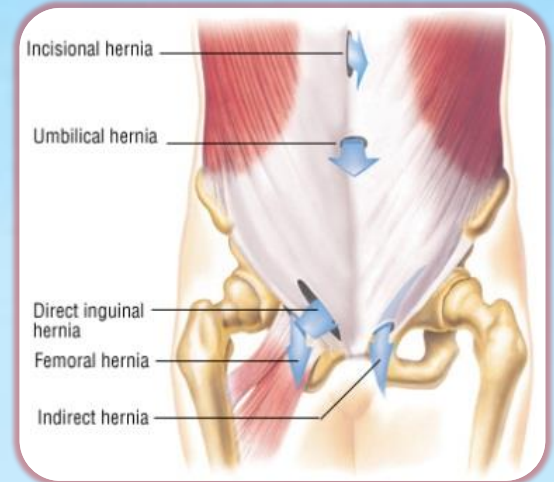


- **Long Shelf Life:** Remains clinically usable for 3 years when stored in room temperature condition

FOR HERNIA REPAIR

Types of Hernia:

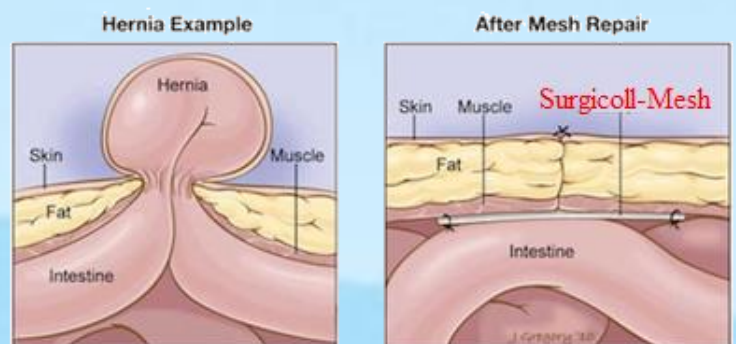
- ✓ **Inguinal:** occurs in the inner groin
- ✓ **Femoral:** occurs in the upper thigh/outer groin
- ✓ **Incisional:** occurs through an incision or scar in the abdomen
- ✓ **Ventral:** occurs in the general abdominal/ventral wall
- ✓ **Umbilical:** occurs at the belly button
- ✓ **Hiatal:** occurs inside the abdomen, along the upper stomach/diaphragm



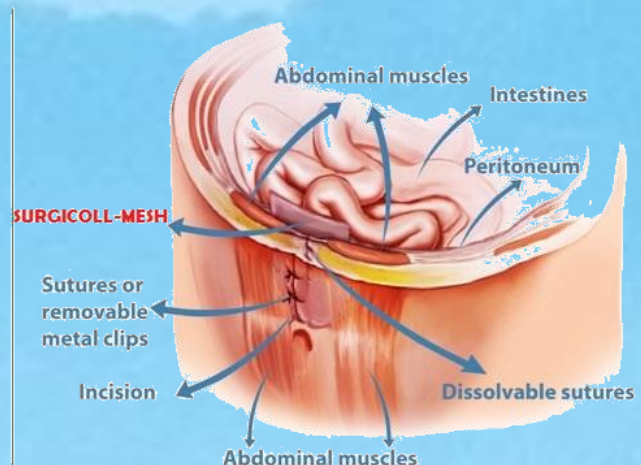
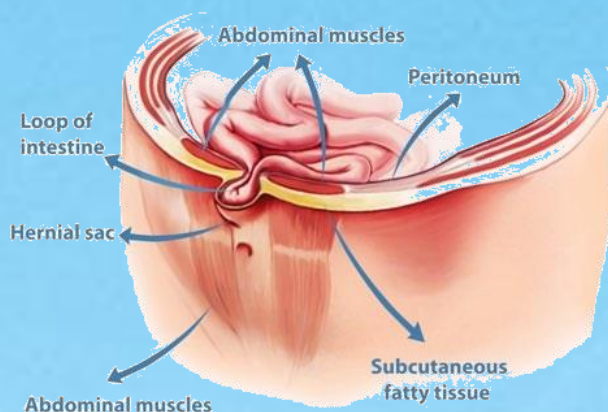
Abdominal Hernia:

Open Surgery:

An open incision is made in the abdomen at the hernia site and the protruded intestine or abdominal tissue is pushed back in place. Depending on the hernia's size, a component separation procedure (cutting through some of the abdominal wall muscles along the side of the body) may be performed. **Surgicoll-mesh** material is placed to reinforce the damaged site and reduce hernia recurrences. The skin is typically closed with dissolvable sutures and glue (ref 6).



Absorbable **Surgicoll-Mesh** would meet the clinical need to provide the physical support. As this product gradually degrades over time, it will trigger the new tissue growth that is intended to provide strength to the damaged site.



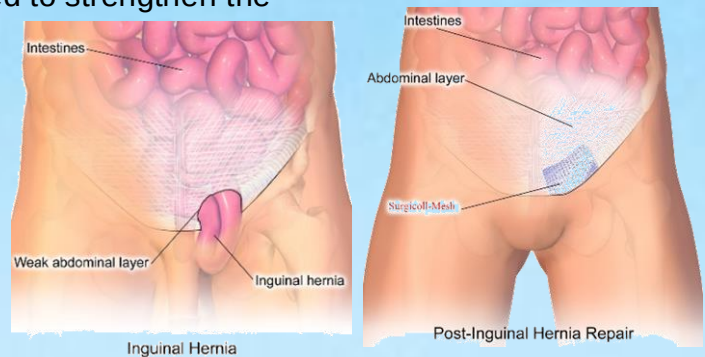
Advanced Biotech Products (P) Ltd.

Laparoscopic Surgery (ref 7):

Several small incisions are made at locations away from the hernia site. A laparoscope (a thin lighted tube with a camera on the tip) is inserted through one of the openings to help guide the surgery. **Surgicoll-Mesh** material may be inserted to strengthen the weakened area in the abdominal wall.

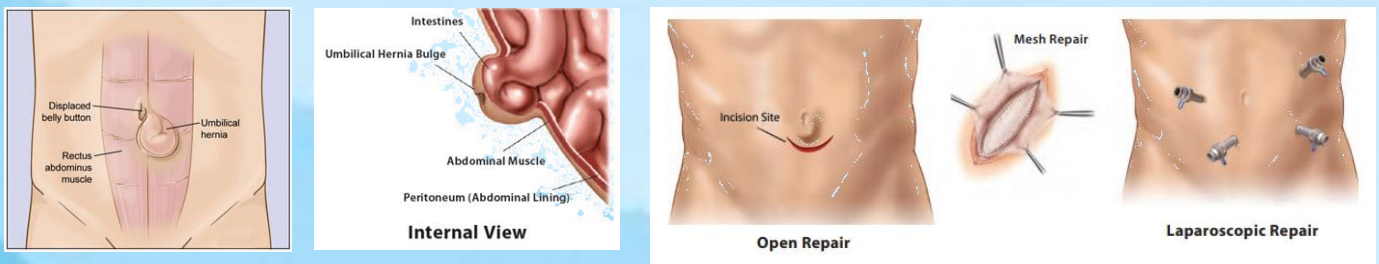
Inguinal Hernia Repair:

The procedure involves making an approximate 10-cm incision in the groin. Once exposed, the hernia sac is pushed to the abdominal cavity or excised. The abdominal wall is then reinforced (ref 8) with **Surgicoll-mesh**.



Umbilical Hernia:

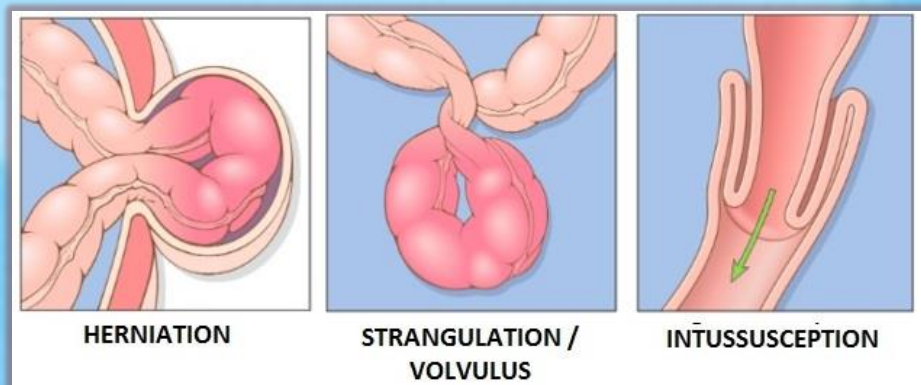
Hernia sac is removed and **Surgicoll-Mesh** is placed on the site. It is attached using sutures to the stronger tissue surrounding the hernia. **Surgicoll-Mesh** extends 3 to 4 cm beyond the edges of the hernia and the umbilicus is fixed back to the muscle (ref 9).



Strangulated Hernia:

Surgery is the only treatment option for strangulated hernias. Surgery normally is a two-step process. First step begins by reducing the strangulated hernia. This is accomplished by gently applying pressure to the hernia to help release the trapped tissue back into the abdominal cavity. Also, clear the twist and untangle the volvulus condition, if needed.

The Second step is repairing the hernia with **Surgicoll-Mesh** like products to prevent recurrence or other complications and to strengthen the tissue. Based on the surgical treatment modality, either local or general anesthesia can be adopted for the procedure.



Compared to this product, SurgiMend (ref 10), our product Surgicoll-Mesh is clinically more advantageous due to following reasons:

1. Physical Structure:

Surgicoll-Mesh fibrils are organized in parallel like in-vivo with native configuration with 20 μ porosity through sedimentation process. On the other hand, SurgiMend has random, non-native fibrillar structure due to lyophilization.

2. Collagen Type:

SurgiMend has significant amount of type-III collagen which may not be highly biocompatible compared to pure Type-I collagen of Surgicoll-Mesh which is non-immunogenic and highly biocompatible for tissue infiltration.

3. Enhanced Bioactivity:

Surgicoll-Mesh is the only collagen product with advanced bioactivity as a result of collagen phosphorylation that induces cell signal transduction. This phenomenon makes the collagen implant encourage new tissue formation within 4 to 5 days.

Complications of other meshes (ref 11):

Bowel obstruction	Migration of the device
Infection	Pain
Scarring	Bleeding
Bowel perforation	Recurrence
Inflammation	Swelling and redness at the hernia site
Fistula formation	Rejection

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