MANAGEMENT OF PHARYNGOCUTANEOUS FISTULA

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R1 ENT HUSE

DEFINITION

- Pharyngocutaneous fistula (PCF) is the communication of the digestive tract with the cervical skin which originates the appearance of saliva on the skin surface after swallowing

- At the level of the surgical incision

- Around the tracheostoma

- The continuous flow of saliva is the main factor involved in hinder the closure of PCF.

INTRODUCTION

- The most common complication of oncologic laryngeal and hypopharyngeal surgery.

❑ **Consequences:**

- ⇧ postoperative hospital stay
- Late onset of swallowing
- Reintervention
- Death caused by carotid artery rupture

CLASSIFICATION

Classification based on SIZE of PCF

- Type I → <2cm
- Type II → 2-4 cm
- Type III → 4-6 cm
- Type IV → > 6cm

CLASSIFICATION

- **Guthrie classification (1974)**

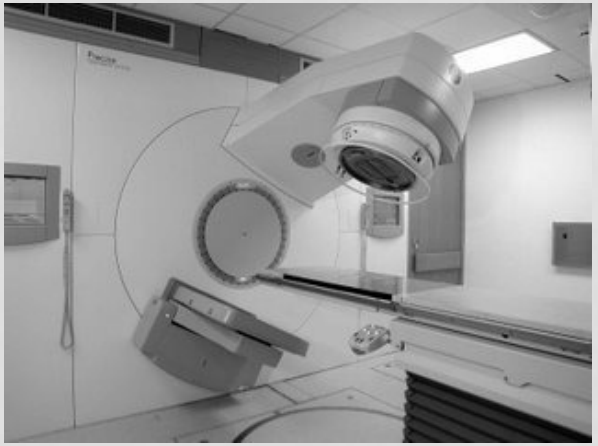
- PCF with a horizontal diameter < 8 mm
- PCF with a diameter less than ¼ of pharyngeal circumference
- PCF less than the half of pharyngeal circumference
- PCF more than the half of pharyngeal circumference

CLASSIFICATION

- ***Vilar Sancho classification***

- PCF in not-irradiated patients
- PCF in irradiated patiens

a) Caused by dehiscence
c) Caused by loss of substance



CLASSIFICATION

Funk's classification:

1. ***Pharyngocutaneous fistula***

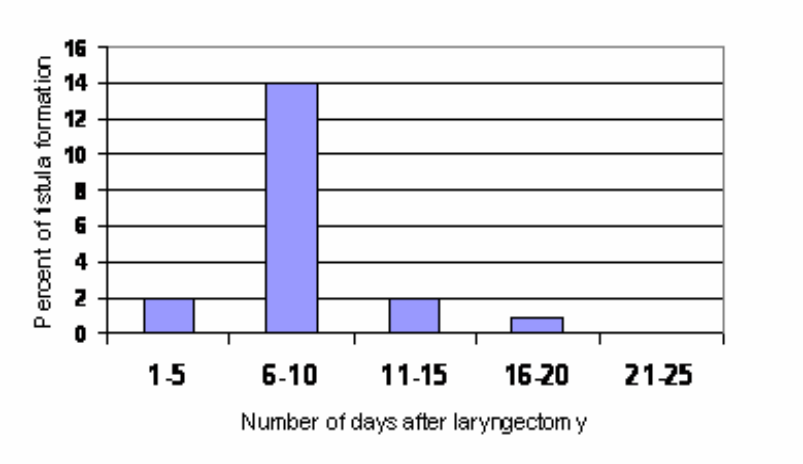
   a) **With** RT, carotid artery involvement, or microvascular anastomosis

   b) **Without** RT, carotid artery affectation or microvascular anastomosis

2. ***Pharyngostoma*** (direct opening of the pharynx to the skin, often accompanied by skin loss)

EPIDEMIOLOGY

- Incidence 5 – 65%
- M>F
- 50-70 years
- 7 -10 days after surgery
- Late onset: 153 days after the procedure



Years	Women		Men		Total	
< 40	1	0.7%	1	0.7	2	1.3
4-50	2	1.3%	21	13.3	23	14.5
51-60	4	2.5%	66	41.7	70	44.3
61-70	3	1.8%	44	27.8	47	29.7
>70	-	-	16	10.2	16	10.2
Total	10	6.4	148	93..6	158	100

RISK FACTORS

- **Gastroesophageal reflux disease (GERD)**
  - 71% of patients with laryngeal carcinoma have abnormal 24-hour pH studies
  - Prophylactic use of Ranitidine (H2 receptor blocker) and Metoclopramide (prokinetic) have decreased the incidence of PCF and the mean length of hospital stay after total laryngectomy.
- **Malnutrition**
  - 30-50% of incidence in patients with H&N cancers.
  - The patients with >10% of weight loss in the 6 months prior to surgery were at greatest risk (50%) for development of major postop complications.
- **Age**
- **Vascular diseases** related to **smoking** and **alcohol** drinking

RISK FACTORS

- Low preoperative Hemoglobin
- Diabetes
- Hepatopathy
- Chronic obstructive pulmonary
- Hypothyroidism
- Immunosuppressive therapy
- Preoperative radiation
- Chemotherapy

Tabla 1. Revisión en la literatura de la incidencia de fístulas faringocutáneas tras laringectomía.

Estudio	Año	N	Fístulas (%)	Fístula en pacientes no irradiados n/n (%)	Fístula en pacientes irradiados n/n (%)
Apriglianc[21]	1990	625	9		
McCombe and Jones[5]	1993	357	23	10/167 (4)	74/190 (39)
Hier et al.[22]	1993	126	19	15/80 (19)	9/46 (20)
Moses et al.[23]	1993	132	21		
Natvig et al.[6]	1993	197	14	2/56 (4)	26/141 (18,5)
Papazoglou et al.[24]	1994	310	9	10/185 (5,4)	18/125 (14)
Fradis et al.[25]	1995	56	12,5	3/26 (11,5)	4/30 (13,3)
Akyol et al.[26]	1995	110	21		
Celikkanat et al.[27]	1995	110	17,3		
Tomkinson et al.[28]	1996	50	16		
Soylu et al.[12]	1998	295	12,5	33/274 (12)	19
Parik et al.[18]	1998	125	22	5/22 (23)	23/102 (23)
Redaelli de Zinnis et al.[3]	1999	246	16		
Cavalot et al.[7]	2000	293	10,9	22/265 (8,3)	10/28 (35,7)
Herranz et al.[29]	2000	471	21		
Ikiz et al.[30]	2000	92	8,7	7/82 (7,9)	1/3 (33,3)
Virtamiemi et al.[19]	2001	133	15		
Saydam et al.[31]	2002	48	12,5		
Mäkitie et al.[32]	2006	122	20		

N = Número de pacientes estudiados; n = número de pacientes con fístula.

RISK FACTORS

- Positive surgical margins
- Preoperative tracheostomy in emergency situations
- Tumor stage and laryngeal site
  - Supraglottic tumors have significantly more fistulas than glottic tumors. Extension to the vallecula or the piriform fossa→ biggest excision of pharyngeal mucosa → more tension.
- Onset of oral feeding
- Vomit
- Infection
- Cervical dissection

RISK FACTORS

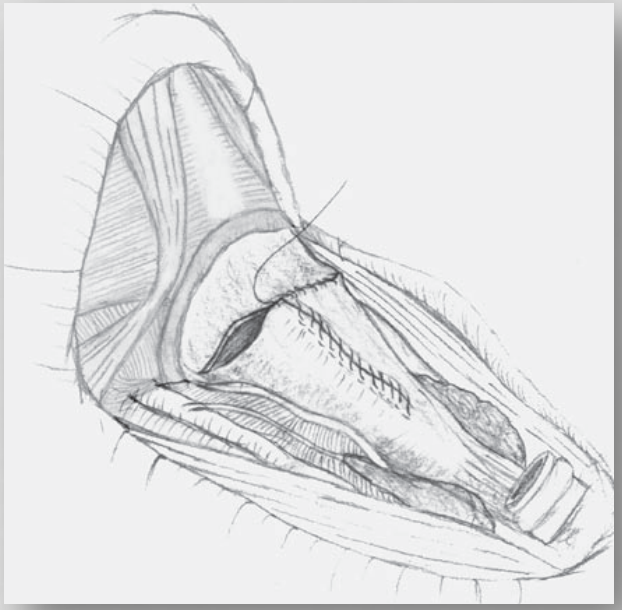
- **Suture material**

  - Vicryl 3/0 > catgut

Vycril has greater tensile strength, less inflammatory reaction and a longer half- life.

- **Suture tecnique**

  - Interrupted suture
  - Extramucose suture
  - Knots tied on the inside
  - T pharyngeal closure > vertical closure



SYMPTOMS AND SIGNS

- Fever (first 48 hours after surgery)
- Persistent elevated neck drain output
- Wound erythema and edema
- Localized tenderness in central neck near the wound
- Appearance of saliva at wound after swallowing

The diagnosis is based on clinical features

DETECTION OF PCF

- **Can be accomplished by careful post-operative monitoring of:**

  - ✓ Temperature > 38.6°C the first 48h. PCF developed in 71% of the patients with early postop fever compared with 4% of those without fever.

  - ✓ Wound amylase concentration > 4000 IU/ λ 1th day after surgery → predictor of PCF development.

  - ✓ Methylene blue swallowing test

  - ✓ Radiologic assessment →Esophagogram

  - ✓ Anatomopathologic examination

MANAGEMENT OF PCF

AIMS

- Prevention
- Early detection of PCF

Conservative treatment ⟺ **Surgical treatment**

It is a complex, dynamic and systemic process, depending on the general health condition of the patient, and can be delayed by several intrinsic factors which should be identified in order to promote the continuity of the treatment process.

MANAGEMENT OF PCF

❑ Prevention

- **Surgical tecnique**: hemostasis and manipulation. To avoid significant crush injury to the tissues, to excise questionably viable mucosa, and to avoid unnecessary tension on the pharyngeal closure.

- **Antibiotics:** 50% of reduction of PCF incidence

- **Gastroesophageal reflux disease (GERD)**
  (ranitidine and metoclopramide 7 days)

- Identification and management of **comorbidities**

- **Enteral nutrition**: NGT or PEG for 10 days

MANAGEMENT OF PCF

- **Conservative management 6-8 weeks**
  - Successful rate: 60-80%

    Irradiated patient: 35-50%

- **Drainage** of secretions→ infection control and prevention of a large fistula
- Removal and curettage of **necrotic tissue**

MANAGEMENT OF PCF

- **Conservative management 6-8 weeks**

  - Pressure dressing for flap down
  - Tube feeding with adequate nutrition
  - Systemic antibiotics: broad-spectrum coverage aerobic and anaerobic

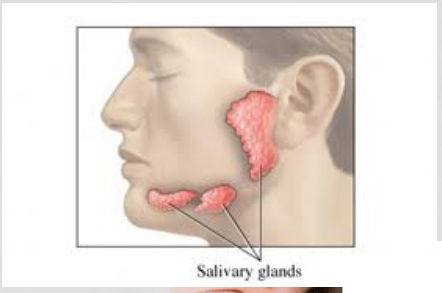
MANAGEMENT OF PCF

- **Conservative management 6-8 weeks**

- Injection of Botulinum Toxin into the salivary glands
- Montgomery salivary bypass tube
- Hyperbaric chamber

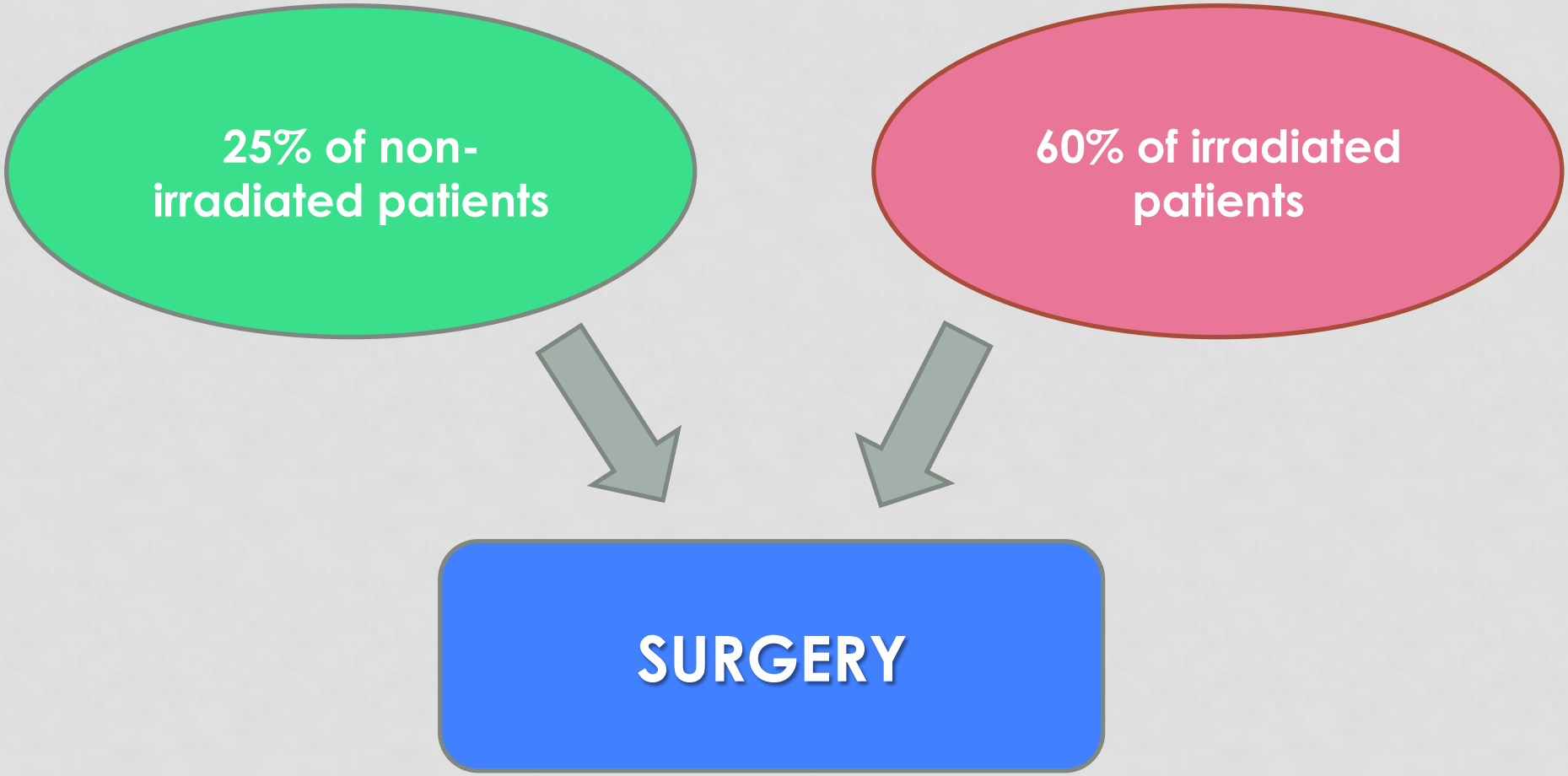
Figura N° 3 Colocación de TDSM con bujía de dilatación.

Figura N°1: Retiro de TDSM



MANAGEMENT OF PCF

- Surgical management



MANAGEMENT OF PCF

Surgical management

- **Primary closure**: with small fistula, minimal sorrounding soft tissue loss and healthy mucosa.

- **Loco-regional flaps**

  a) Myocutaneous flaps

  pectoralis major, *latissimus dorsi*, deltopectoral flaps

  b) Muscle flaps

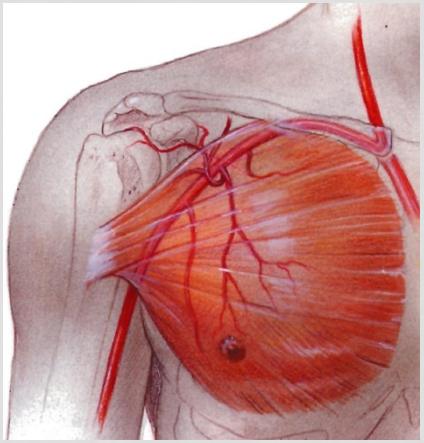
  sternocleidomastoid flap

- **Free flaps**

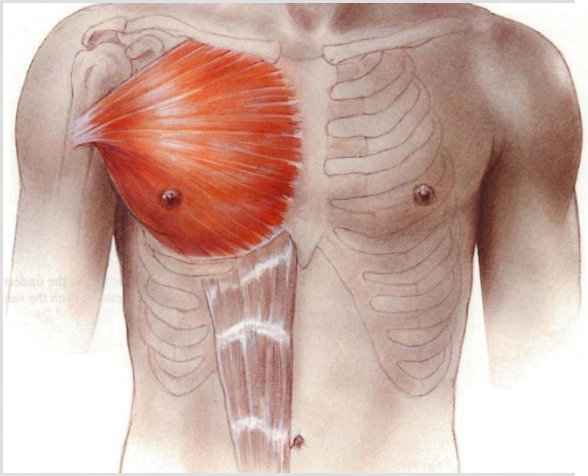
  Anterolateral thigh flap, radial forearm flap, free jejunal autograft

MANAGEMENT OF PCF

- **Surgical management**
  - ***Locoregional flaps: myocutaneous flaps***
  - ✓ ***Pectoralis major flap***

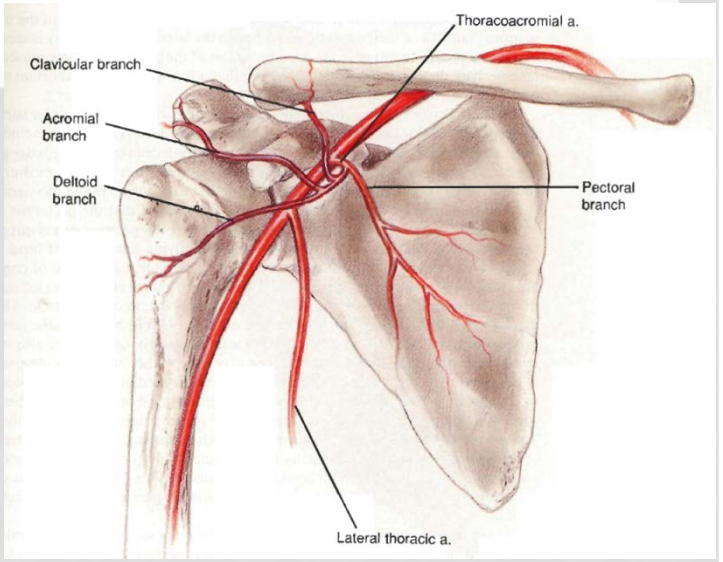


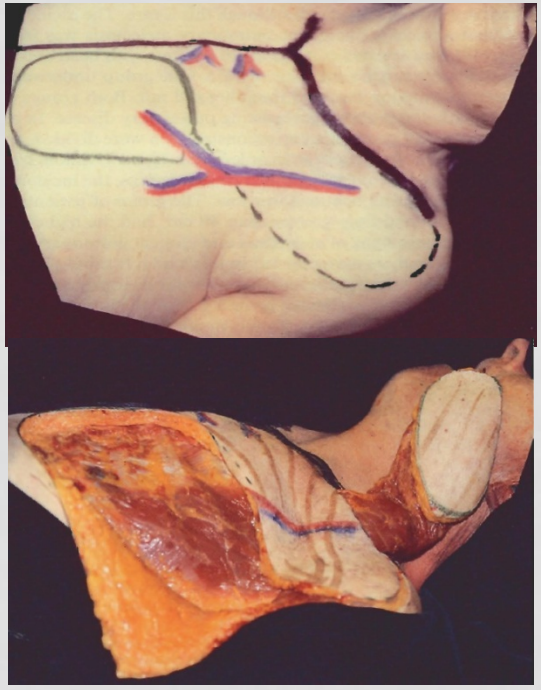
- Rich vascularity
- Large skin territory
- Well vascularized tissue coverage of the carotid artery in the event of PCF
- Easy to harvest in the supine position
- Ability to transfer 2 epithelial surfaces for inner and outer lining

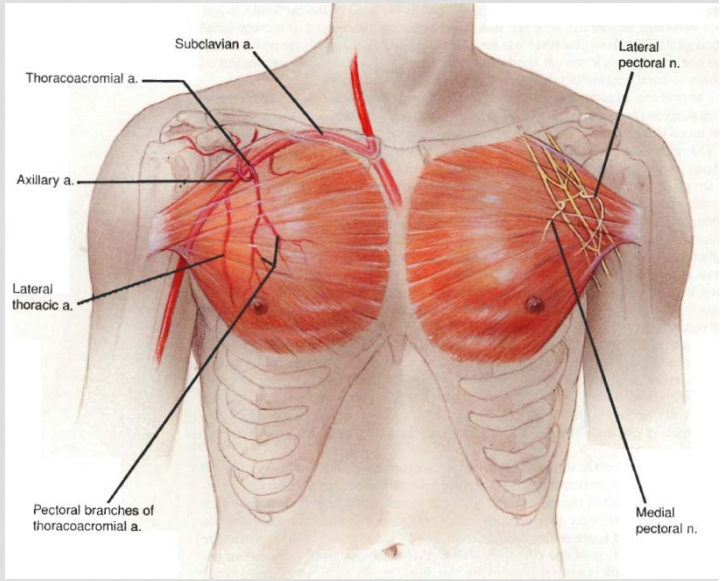


MANAGEMENT OF PCF

- **Surgical management**
  - **Pectoralis major flap**
    - Total flap necrosis 1-3%
    - Partial flap necrosis 4-7%

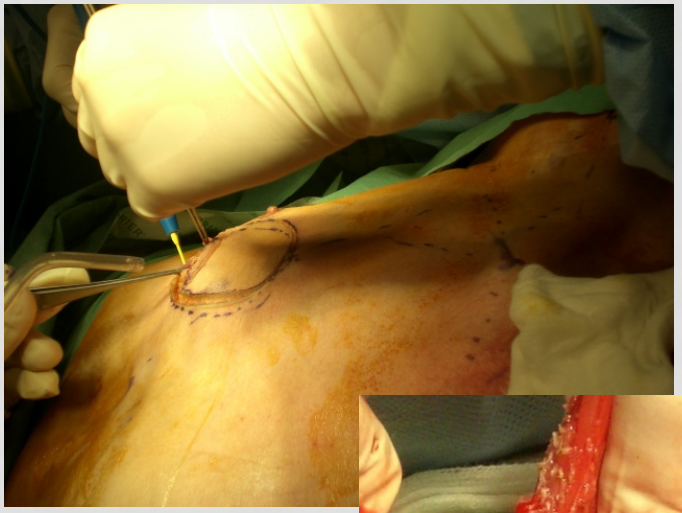


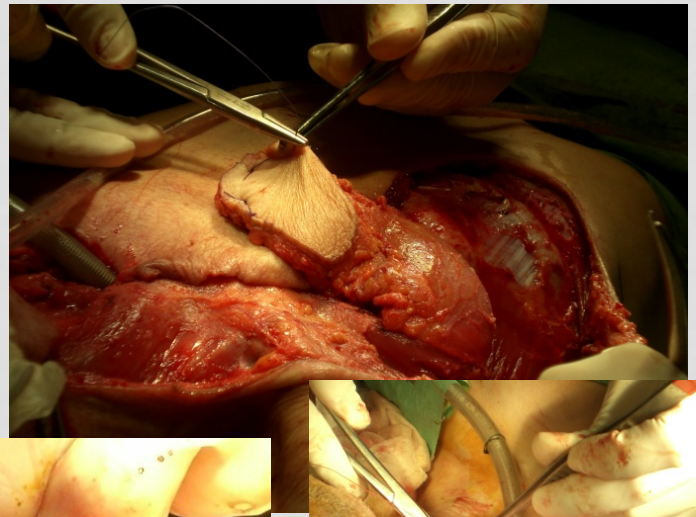




Management of PCF

- Surgical management
  - ✓ Pectoralis major flap





CONCLUSIONS

- Risk pre-surgery
- Identification and treatment of comorbidities
- Good surgical technique
- Multidisciplinary approach
- ↑ post-operative hospital stay
- Possible lethal complications

THANK YOU ☺