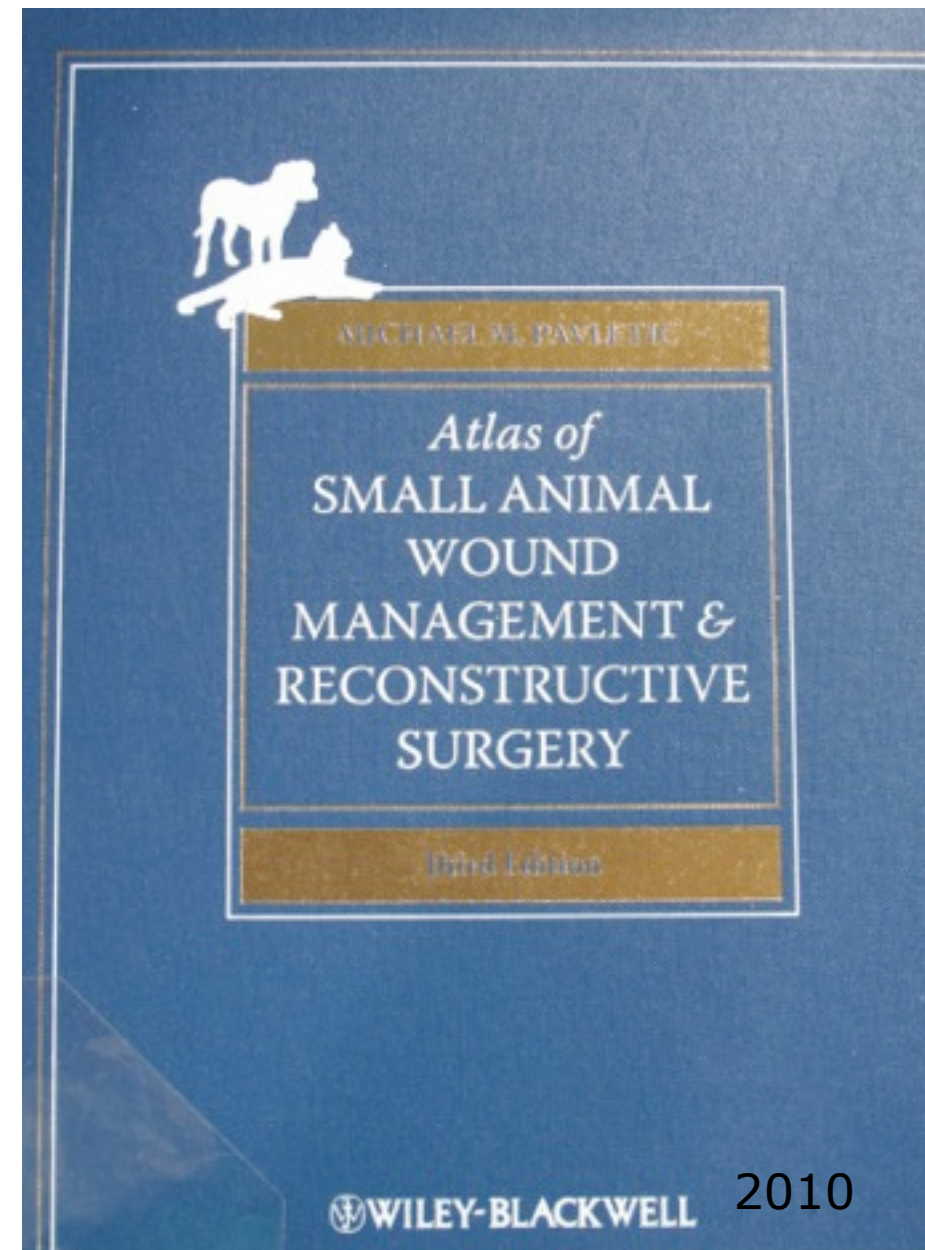
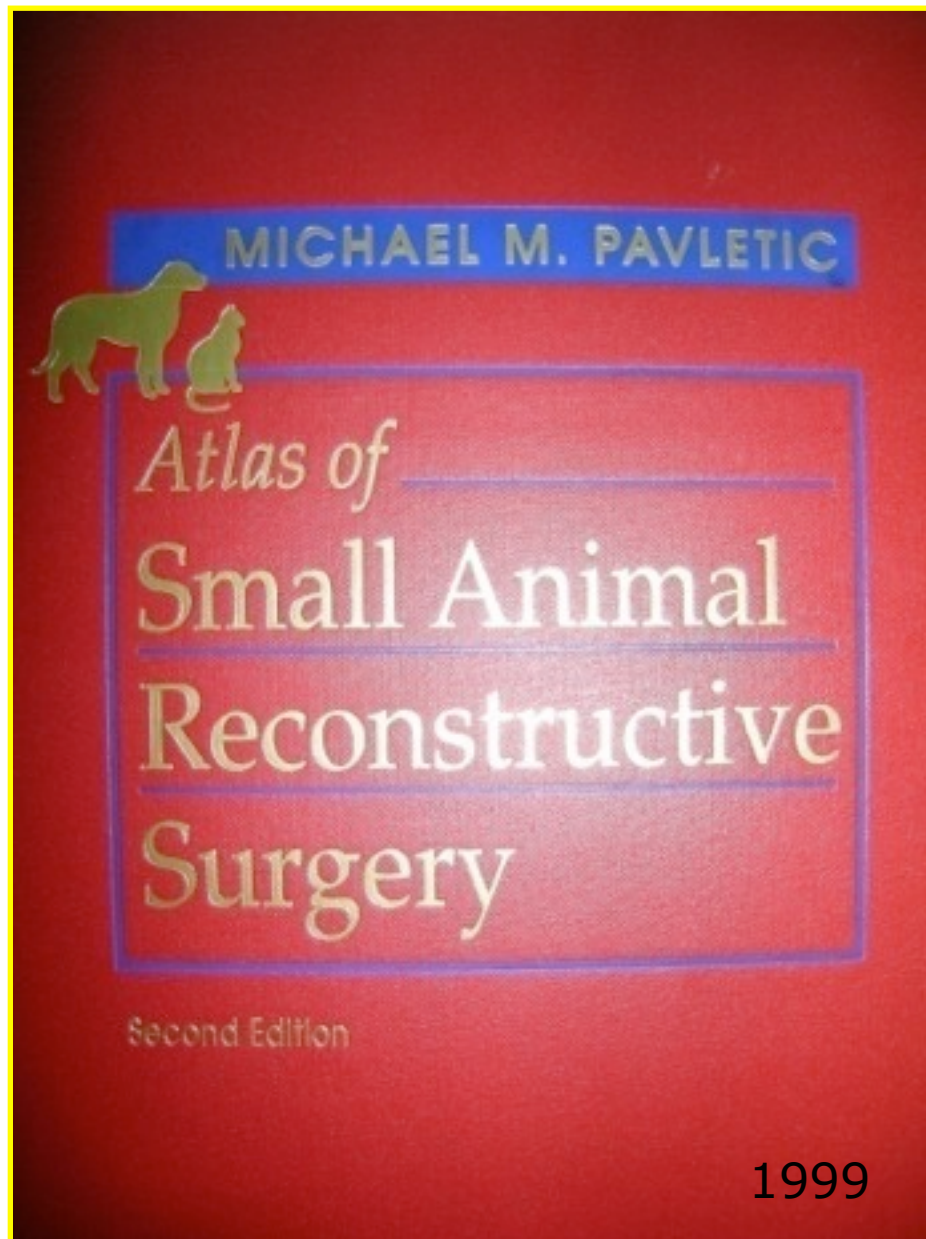


Practical: reconstructive surgery

Program, Saturday

- 09.00 – 10.30 – tension relief and pedicle flaps
- 10.30 – 11.00 – Coffee-break
- 11.00 – 12.30 – free grafts - skin axial pattern flaps
- 12.30 – 14.00 – Lunch
- 14.00 – 15.30 - skin and myocutaneous axial flaps
- 15.30 – 16.00 – Coffee Break
- 16.00 – 17.30/18.00 – muscle and omental flaps
(amputation)
- Answering to possible questions

Reconstructive Surgery



Program, Saturday

- 09.00 – 10.30 – tension relief and pedicle flaps

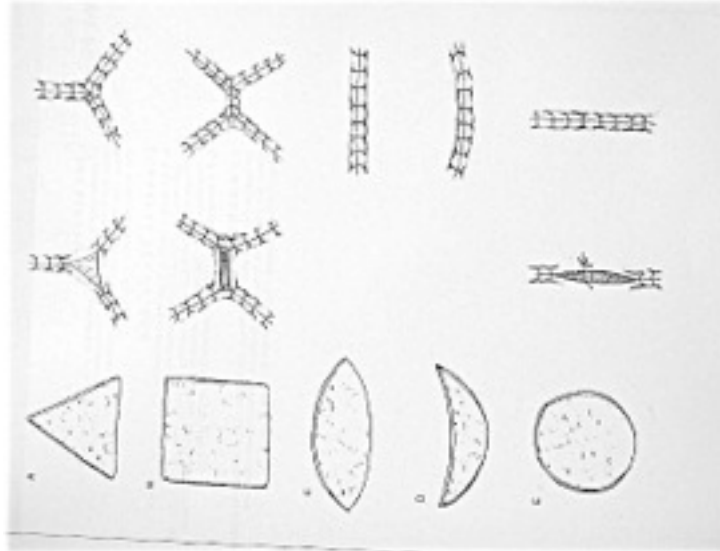
Principles of reconstructive surgery

ACCURATE PREOPERATIVE PLANNING

- extent of trichotomy
- surgical preparation of the entire area

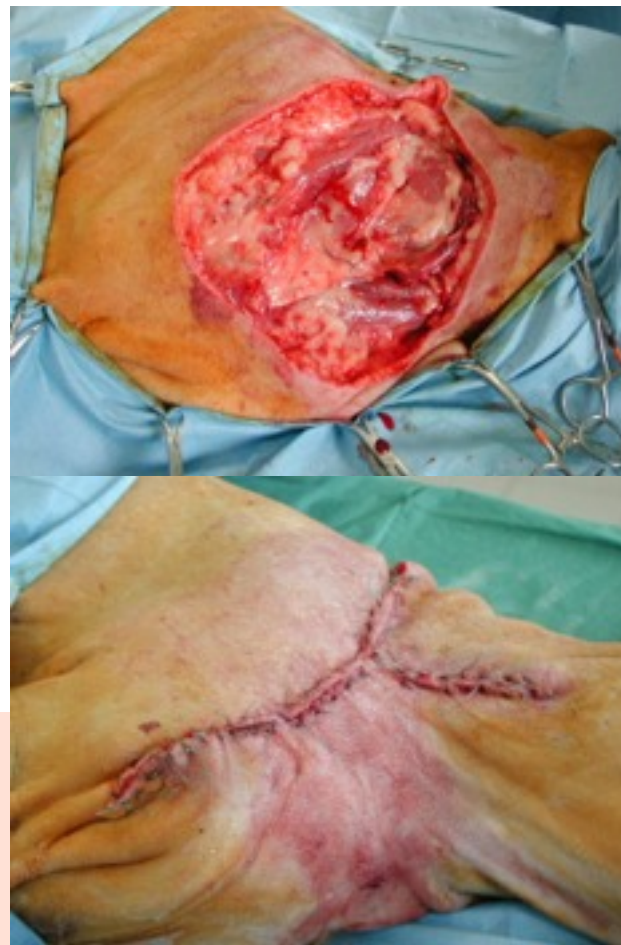


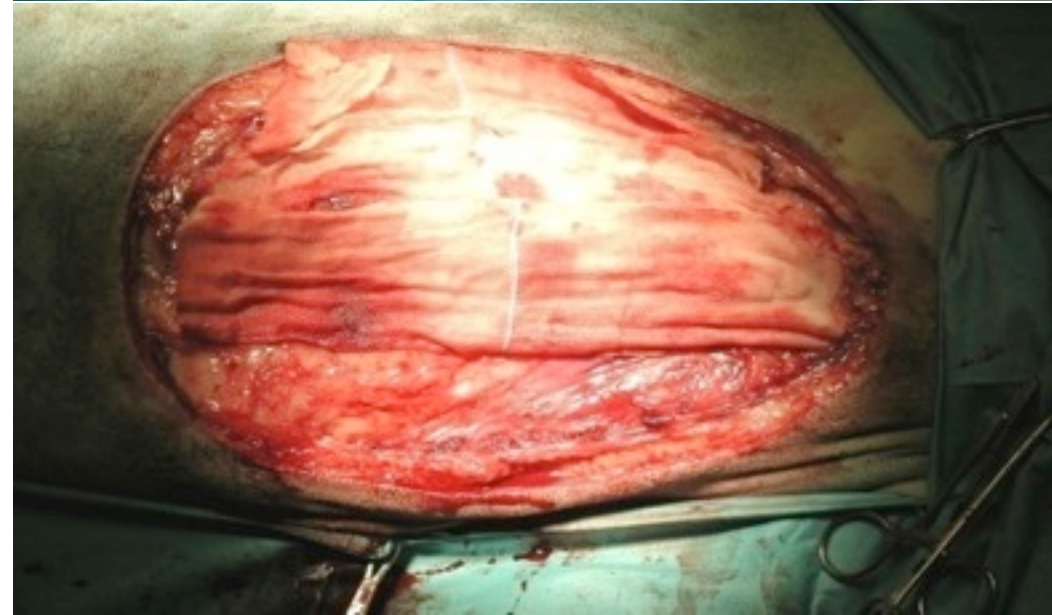
Principles of reconstructive surgery



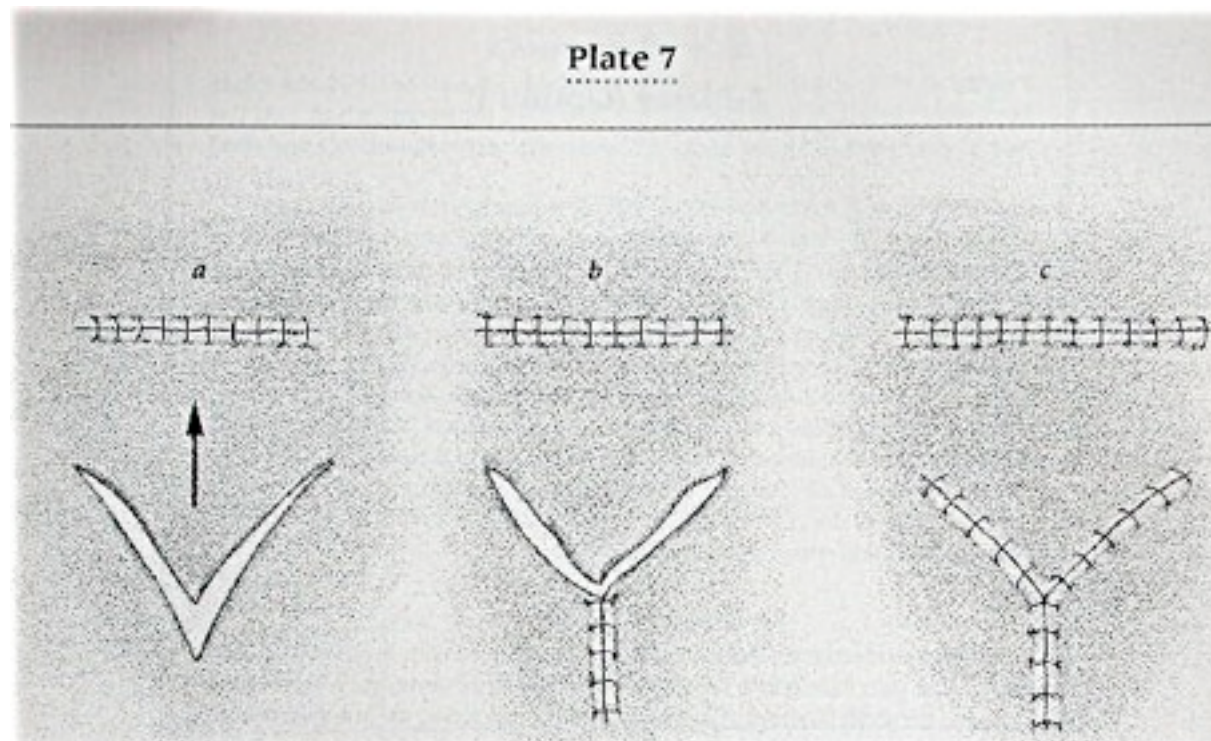
From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

geometrical wound
preferred as these
are easier to
reconstruct (start
from angles)





From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010



2 release incisions

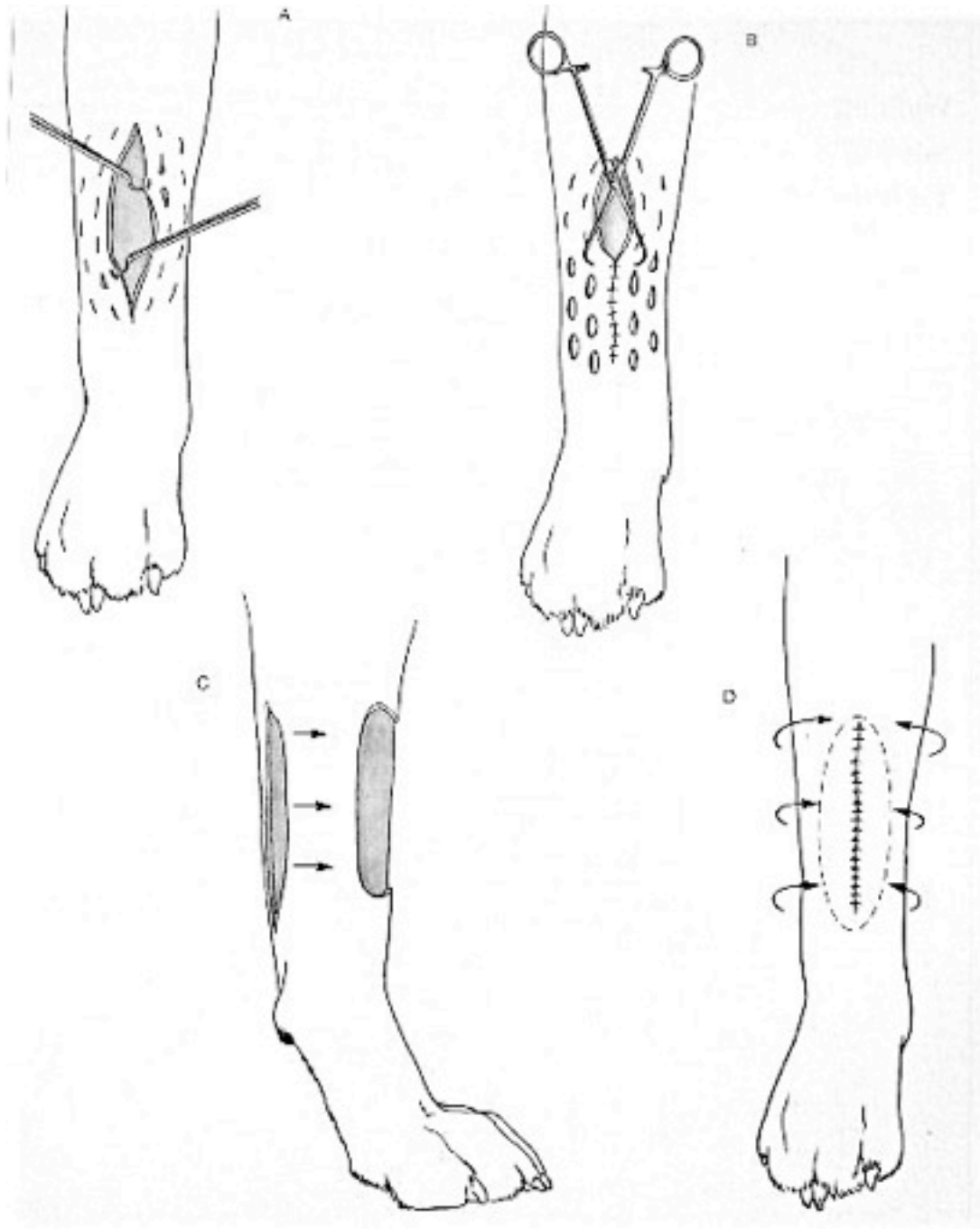




release incision



From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010



multiple release incisions





multiple release incisions

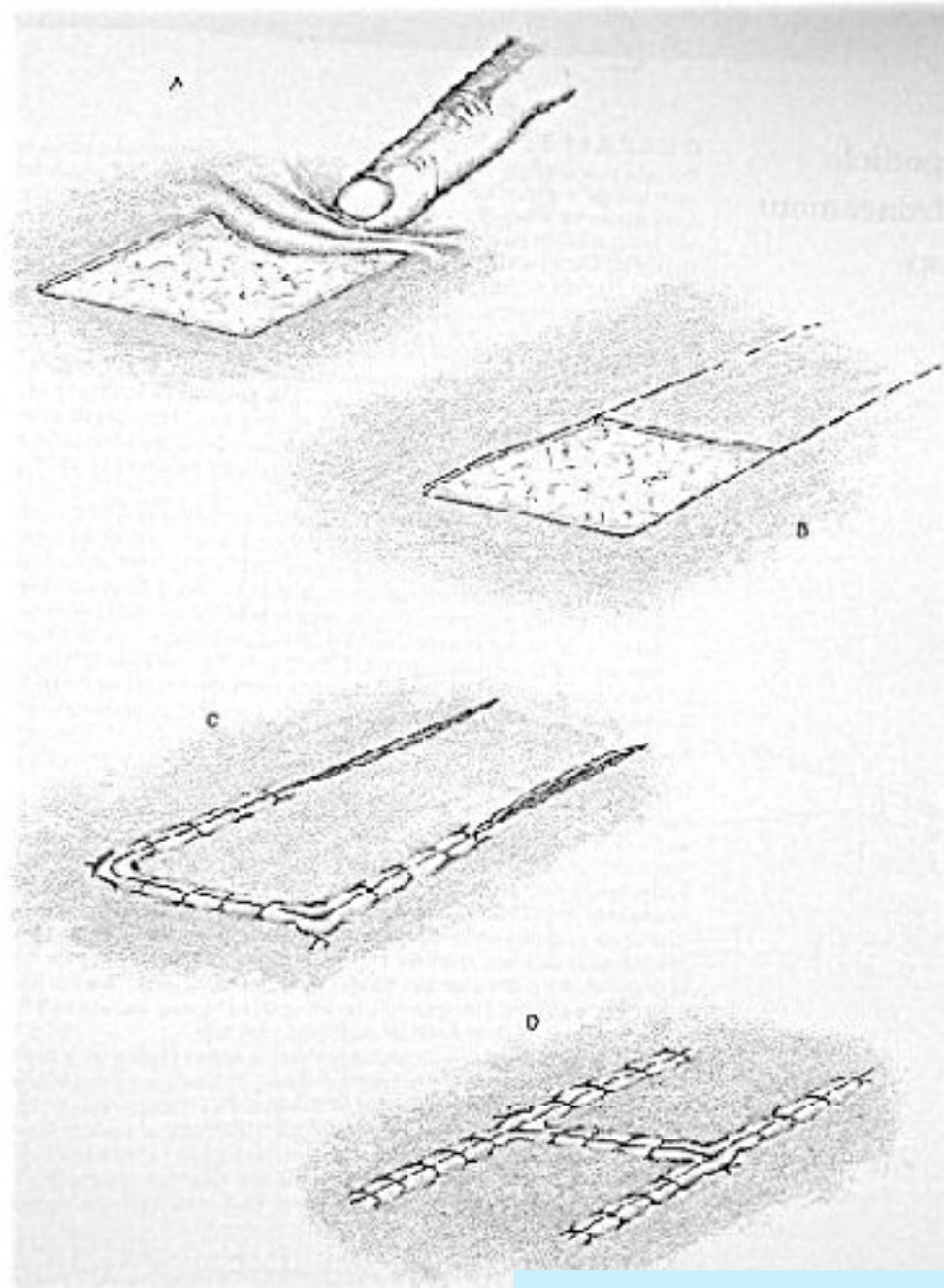
Reconstructive procedures

- second -intention healing
- tension-relieving techniques
- **local flaps**
- distant flaps
- axial pattern flaps
- myocutaneous and muscle flaps
- free grafts
- +/- omentalization, mesh

- If present they MUST be elevated including the panniculus layer
- the base should be large enough to support the perfusion of the subdermal plexus of the flap
- length proportional to the flap base in order to avoid necrosis of the most distal part

ADVANCEMENT FLAPS

ROTATING FLAPS



**From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010**

Advancement flaps

usually used to close squared or rectangular defects
width of the flap should be equal to the defect's width
one or two flaps (H plasty)

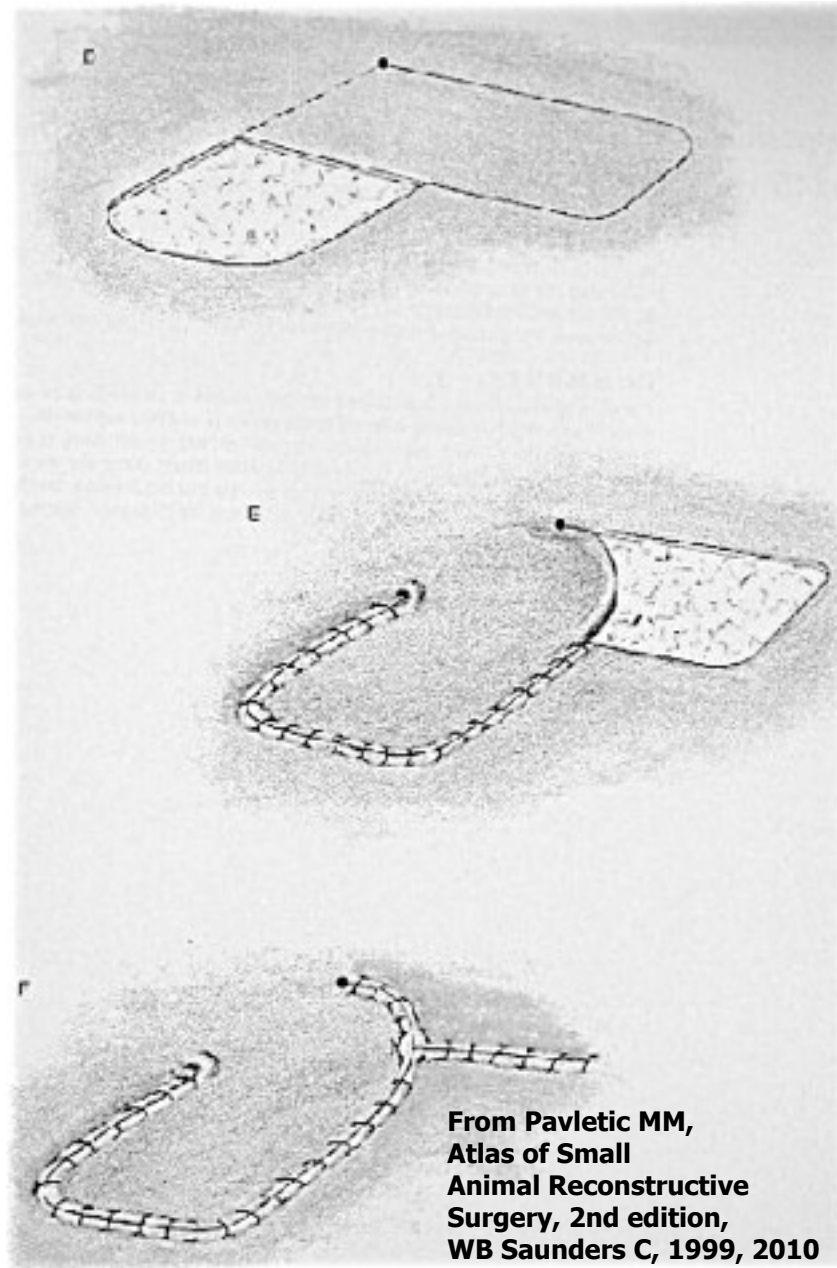








ROTATING (PIVOTING) FLAPS



Transposition flap

the flap is rotated, usually between 45-90°

its width should be equal to the defect's width

its base is aligned along one defect's margin







Program, Saturday

- 11.00 – 12.30 – free grafts - skin axial pattern flaps

Free grafts

- pieces of skin of different shape, size and thickness
- excised from a donor site (usually the lateral thorax or abdomen) and transferred in another one (more often distal limbs)

They can be prepared as

- *partial* (epidermis and a limited part of dermis) thickness grafts
- *FULL* (epidermis and dermis) *thickness* grafts - ESPECIALLY IN VET. MED.

Free grafts

SURVIVAL depends on neovascularization

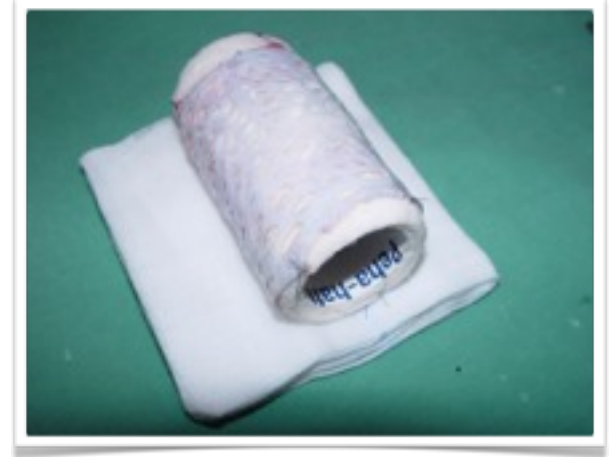
Partial thickness grafts heal easier than full thickness ones

Full thickness grafts, if healed correctly, are haired

All the adipose tissue must be carefully eliminated

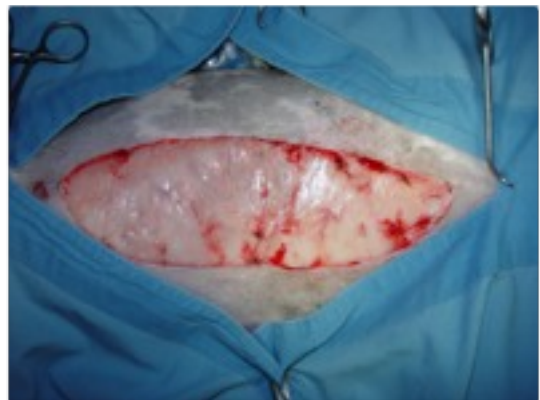
Ideally, they are harvested from the donor site and positioned over a healthy granulation tissue

May also be placed on a fresh wound



From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

To avoid collection of fluid, alternate full thickness incisions are performed in the graft



BANDAGE, 3 layers:

- 1) non-adherent dressing with an oil-based antibiotic ointment
- 2) absorptive/padding layer (cotton roll)
- 3) elastic wrap (e.g. self-fix)

If the graft has been applied over a joint region, the latter should be immobilized

Tie-over bandages may be used in difficult areas

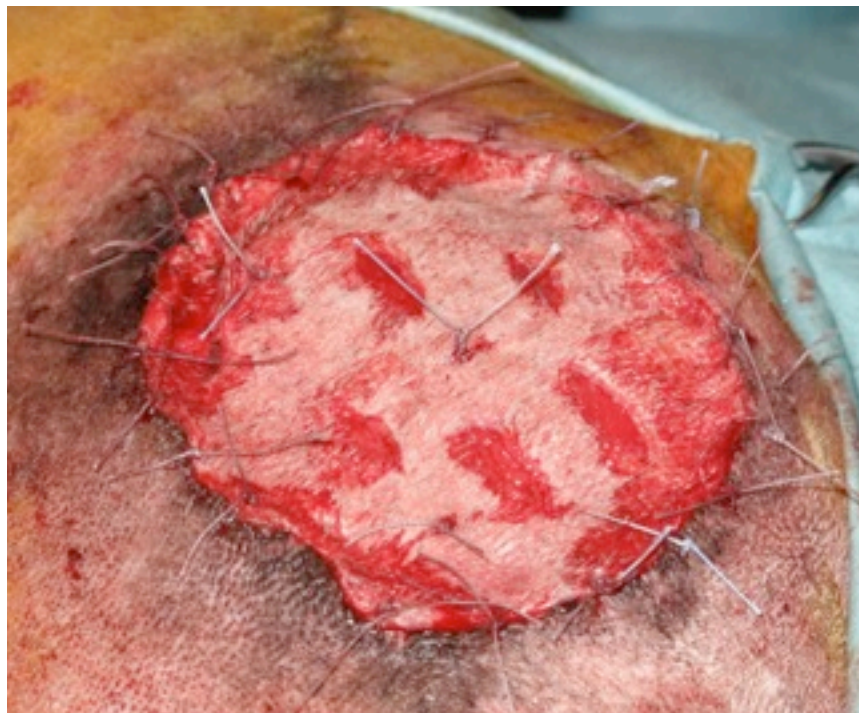
First change (be very careful ! irrigate with warm sterile saline) after 72 hours, then every 3-4 days

More frequent causes of **failure** are movement, infection and collection of fluid (blood, serum) under the graft





tie-over

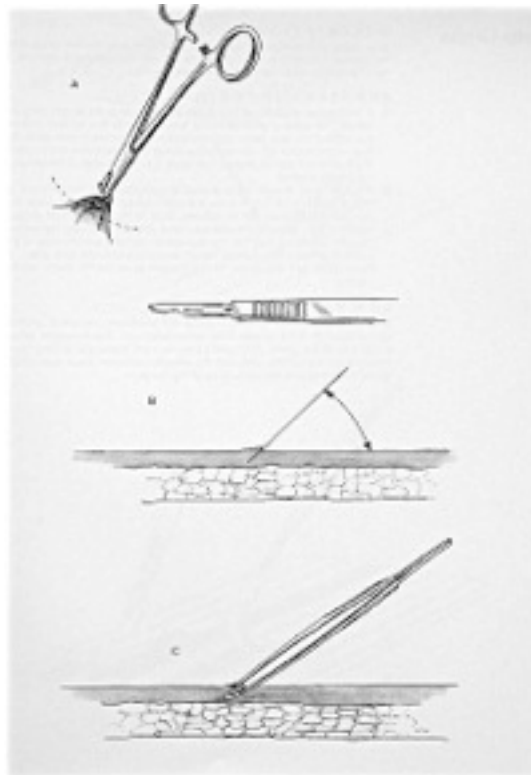
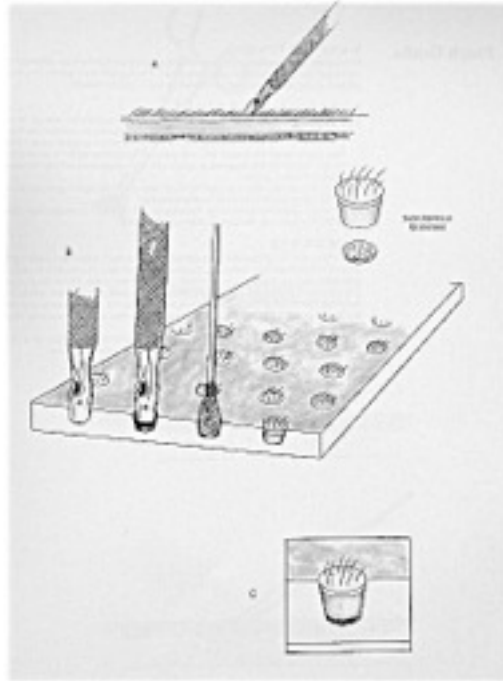






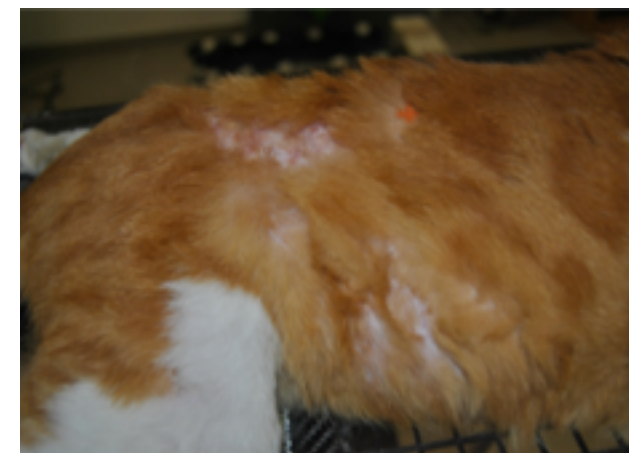


Pinch and punch free grafts

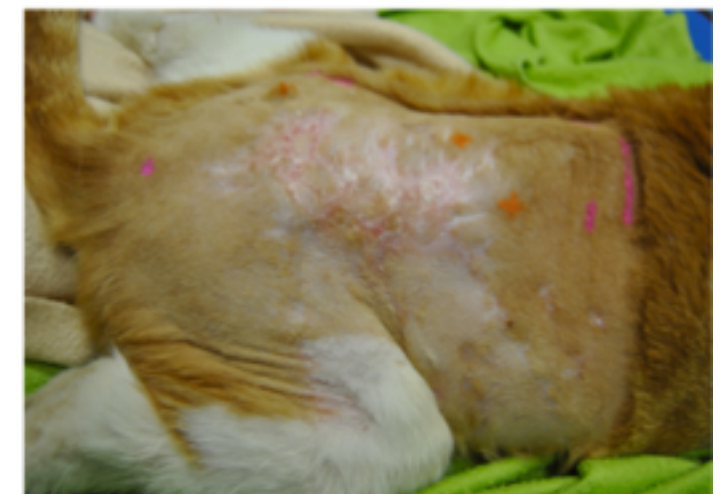


From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010



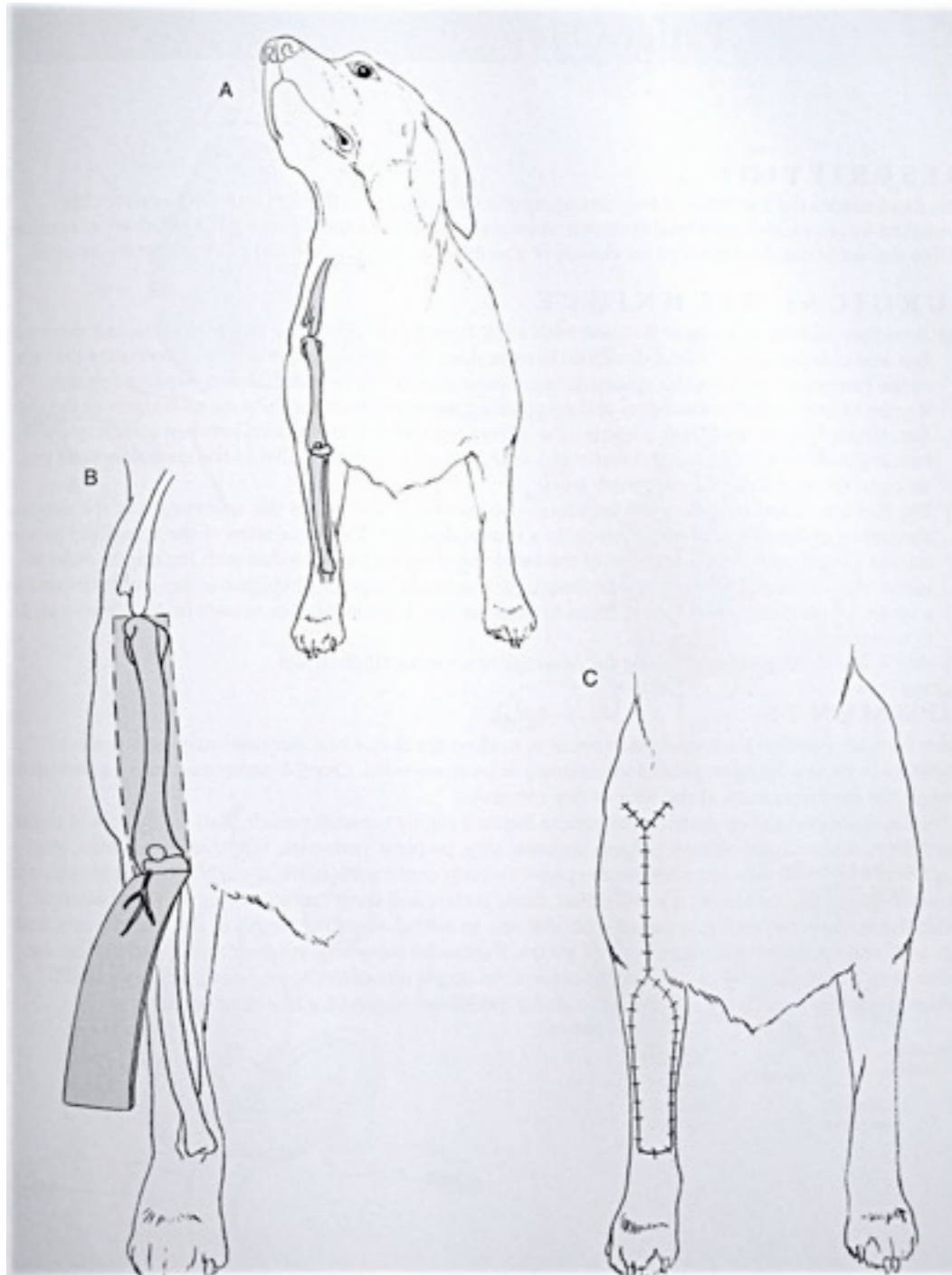


when radiation
starts



Skin axial pattern flaps

Superficial brachial axial pattern flap



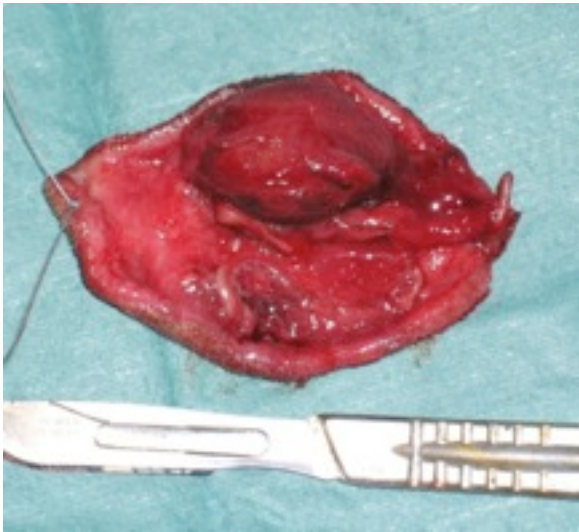
- antebrachium up to carpus
- shoulder
- elbow

carpal region: necrosis

Centered over the cranial aspect of the brachium, parallel to humerus

From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

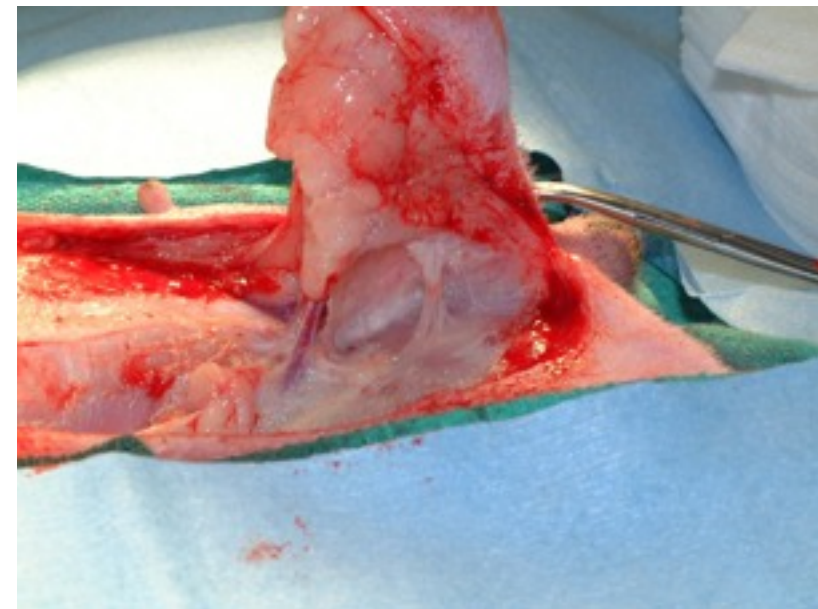
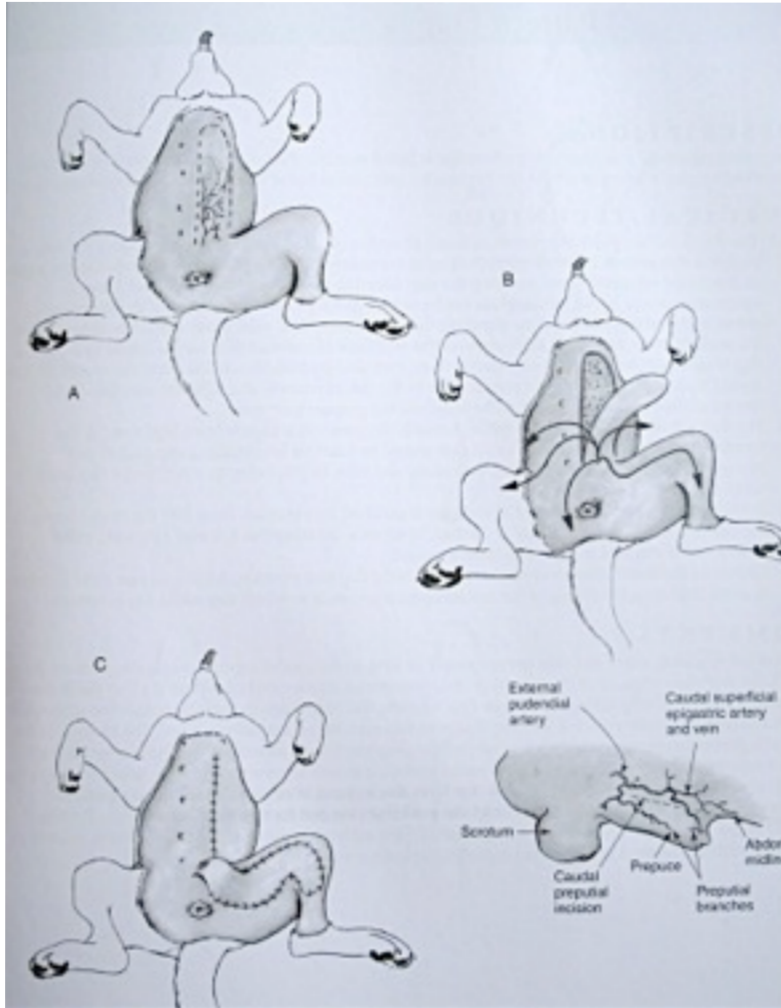






Caudal superficial epigastric axial pattern flap

Do you remember mastectomy ?

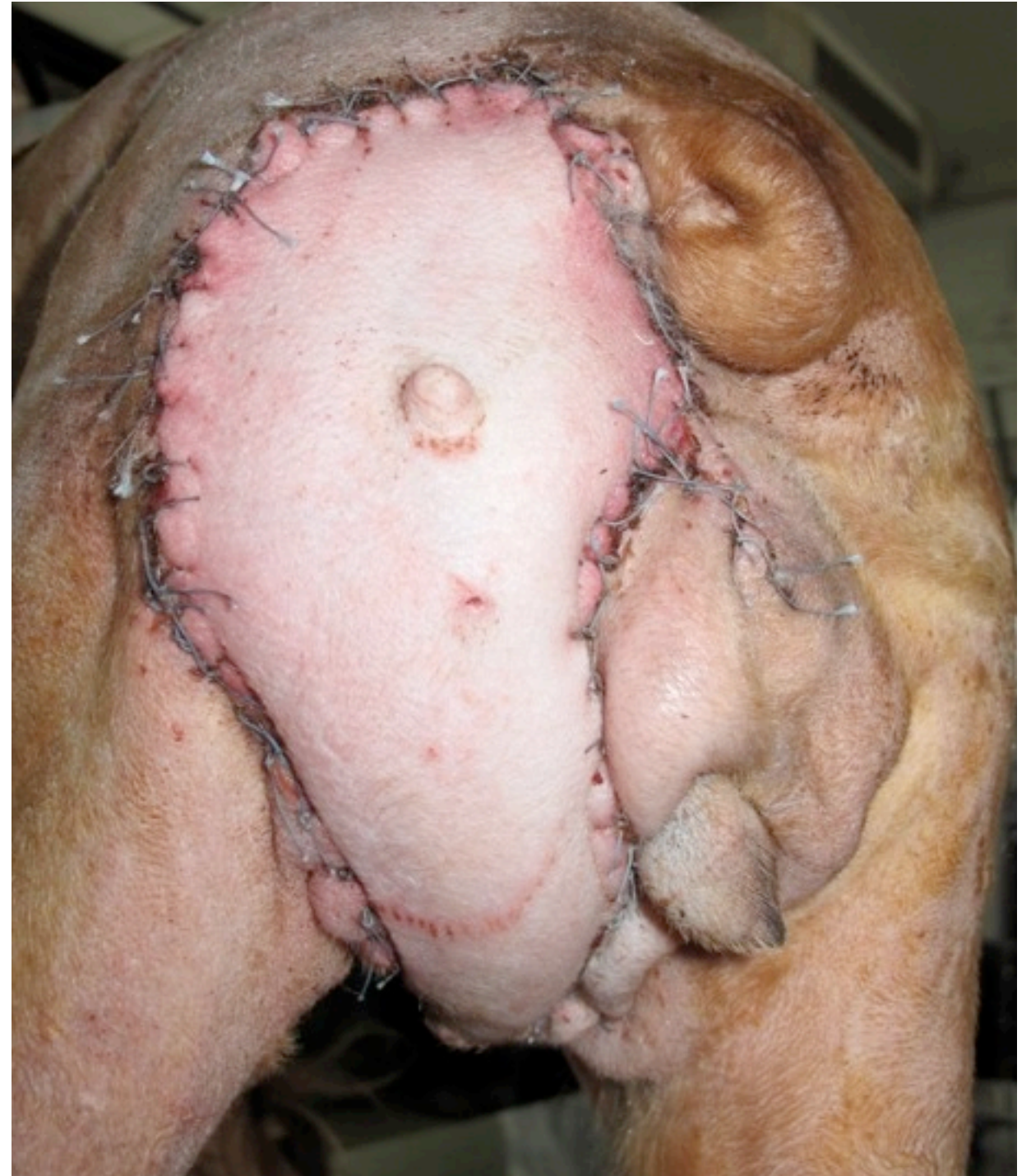


The flap includes MG 3(2) to 5 (2-4 in CATS).
Vascularization derives from caudal epigastric artery that emerges from the inguinal canal

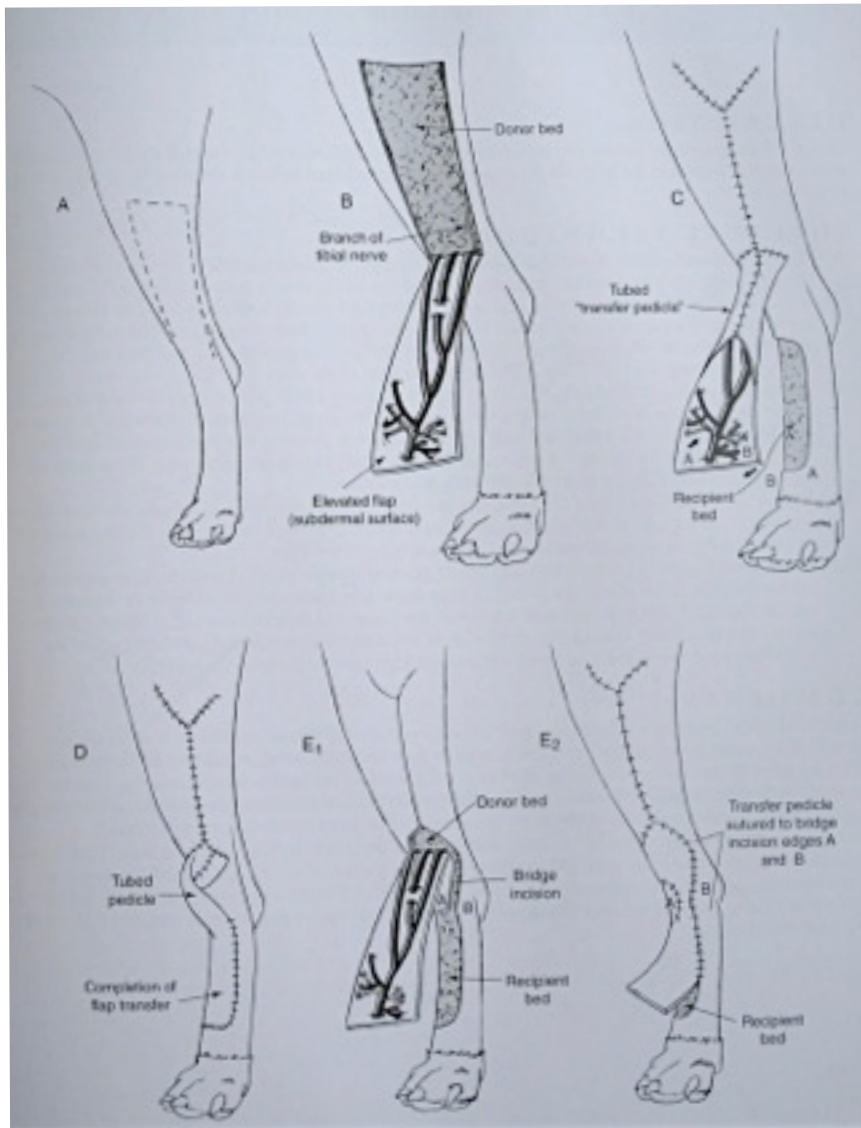
From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010







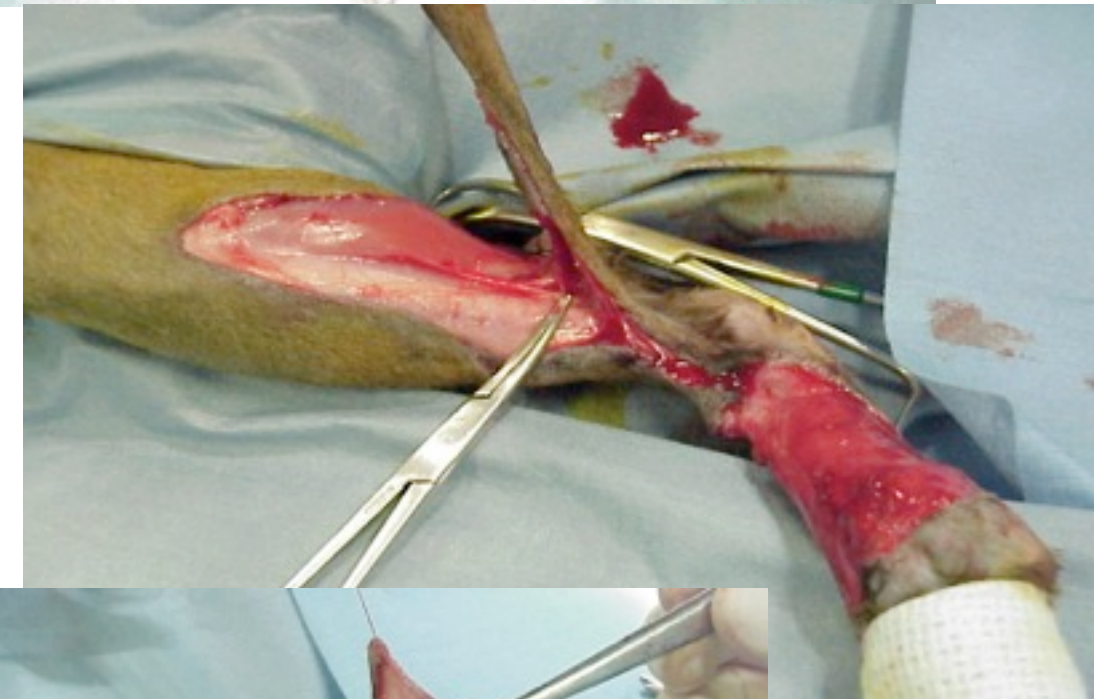
Reverse Saphenous Conduit flap

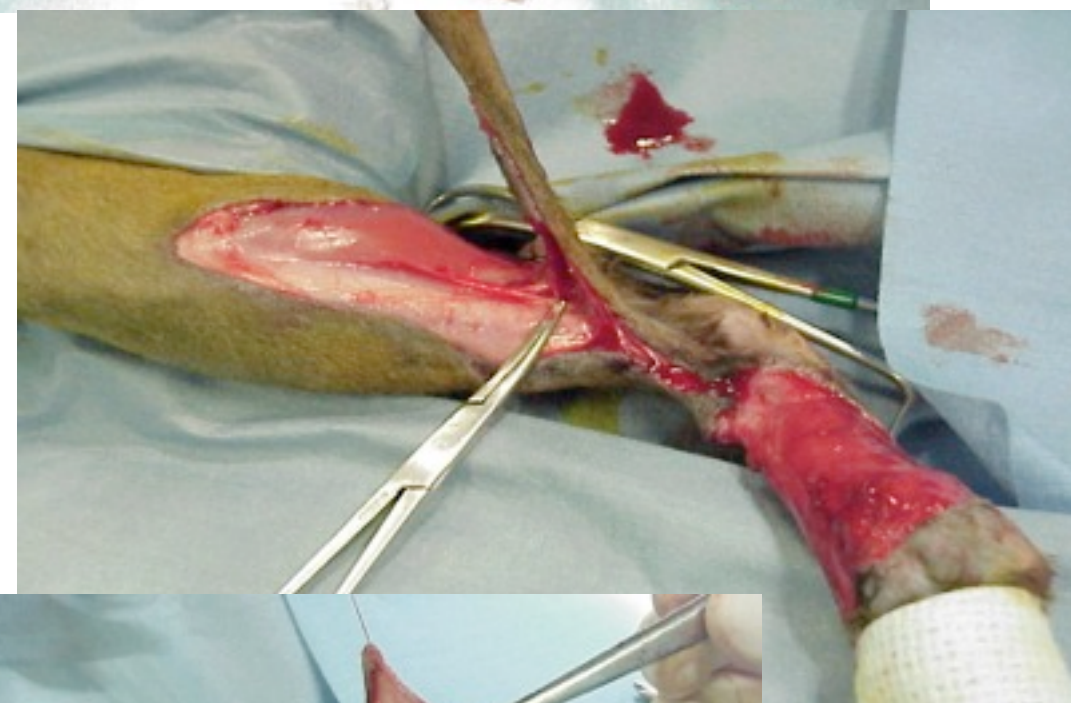


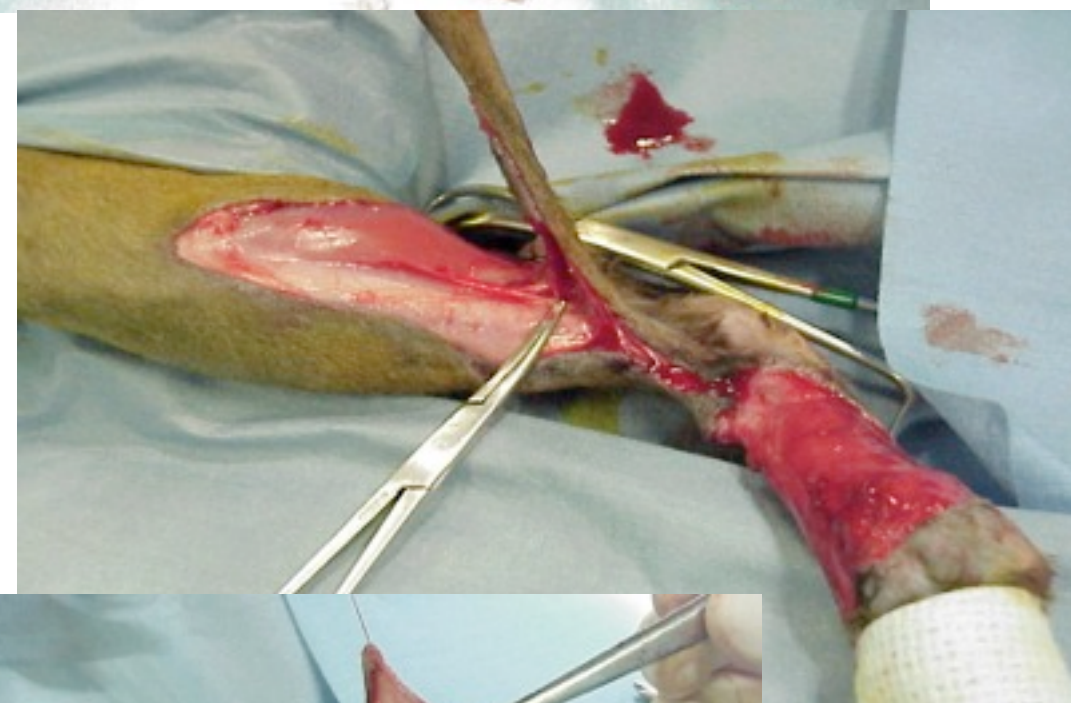
From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

- constructed on the medial aspect of the tibial region
- survival provided by an alternative and complex vascularization















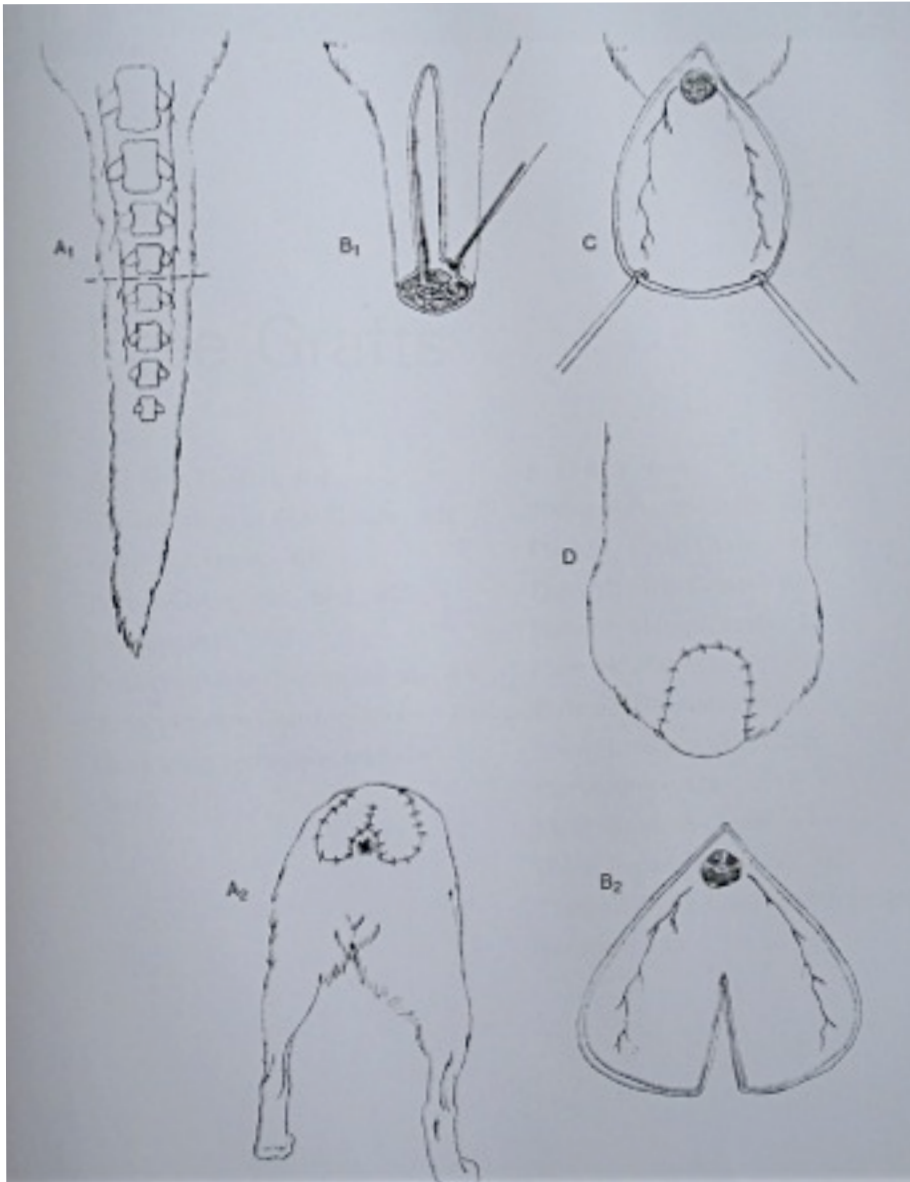


Lateral caudal (tail) axial pattern flap

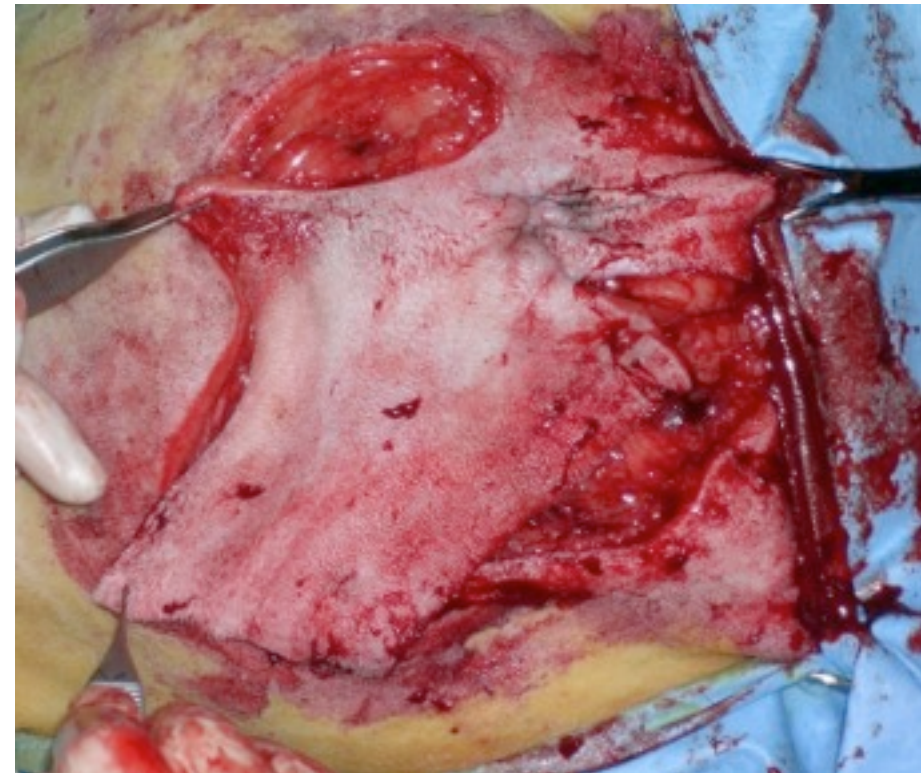
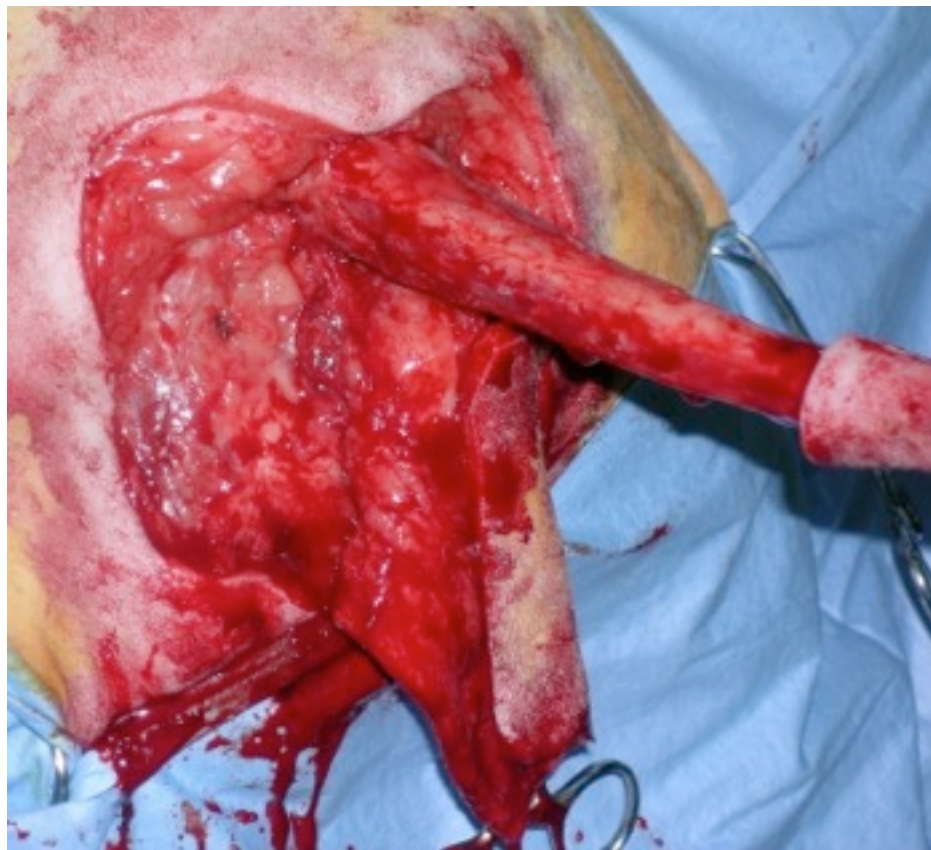
Tail amputation and use of the skin

for defects of

- perineum
- caudodorsal trunk



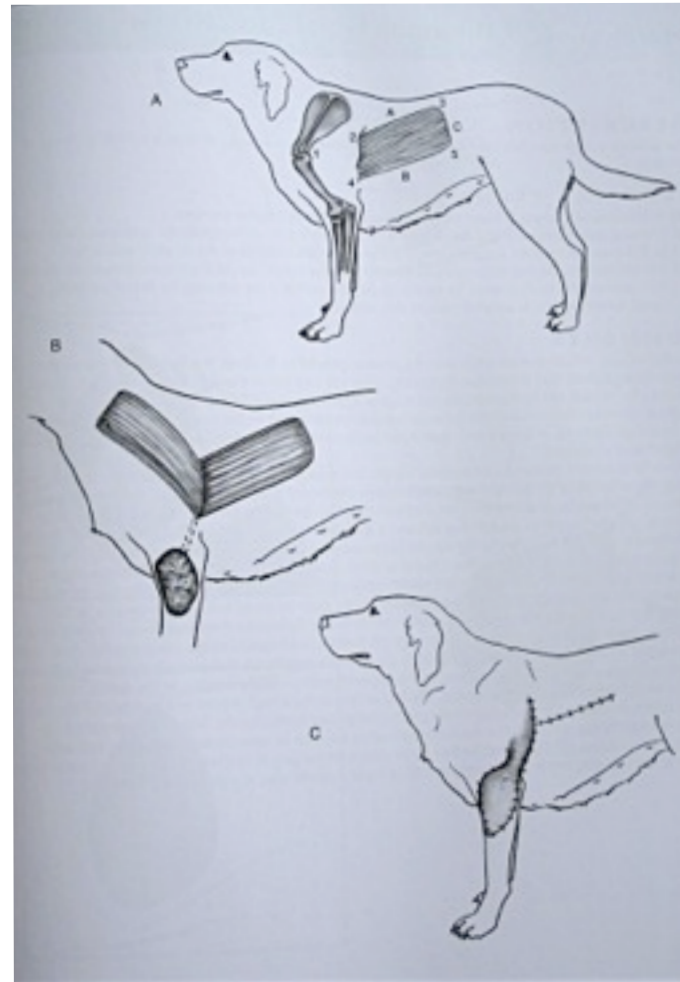
From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010



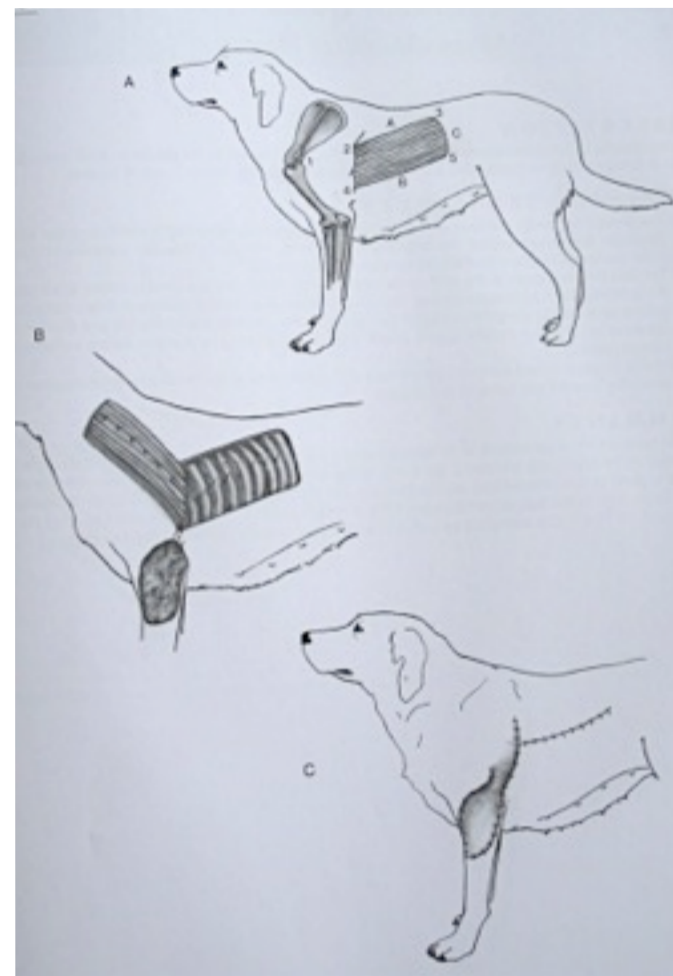
Program, Saturday

- 14.00 – 15.30 - myocutaneous axial flaps

Cutaneous trunci myocutaneous flap



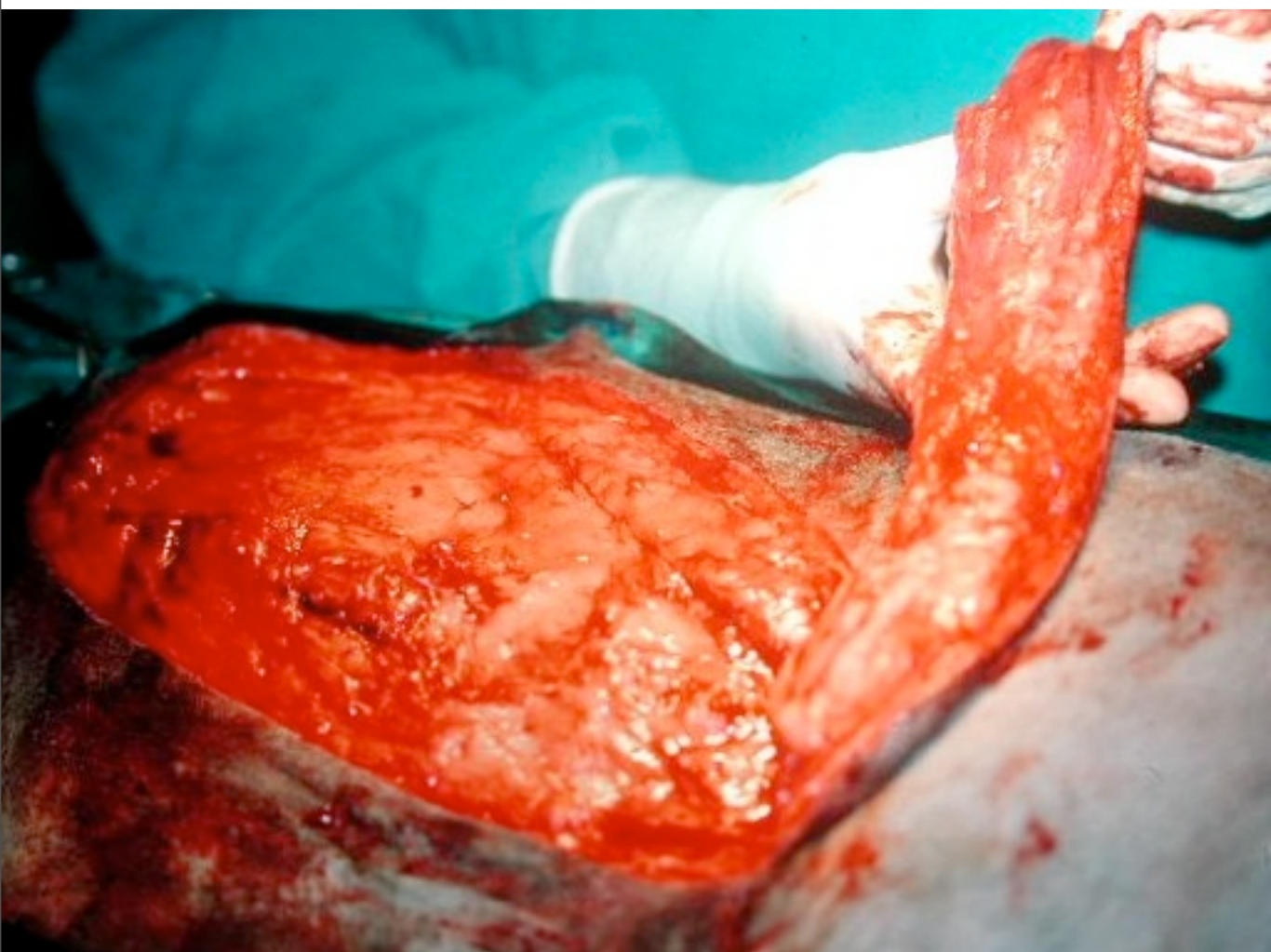
Latissimus dorsi myocutaneous flap



From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

Landmarks for the latissimus dorsi and cutaneous trunci myocutaneous flaps. 1, Ventral border of the acromion; 2, adjacent caudal border of the triceps muscle; 3, vertebral attachment of the last rib; 4, distal third of the humerus; and 5, axillary skin fold. To construct the flaps, draw a line from 2 to 3 and a second parallel line from 5. Incise and connect the two parallel lines dorsally.

- Used to cover defects of the elbow region where a thick coverage (skin/muscle) is usually necessary
- Borders: **dorsal**, from ventral to acromion toward the 13th rib head; **ventral**, from the forelimb fold parallel to the previous one



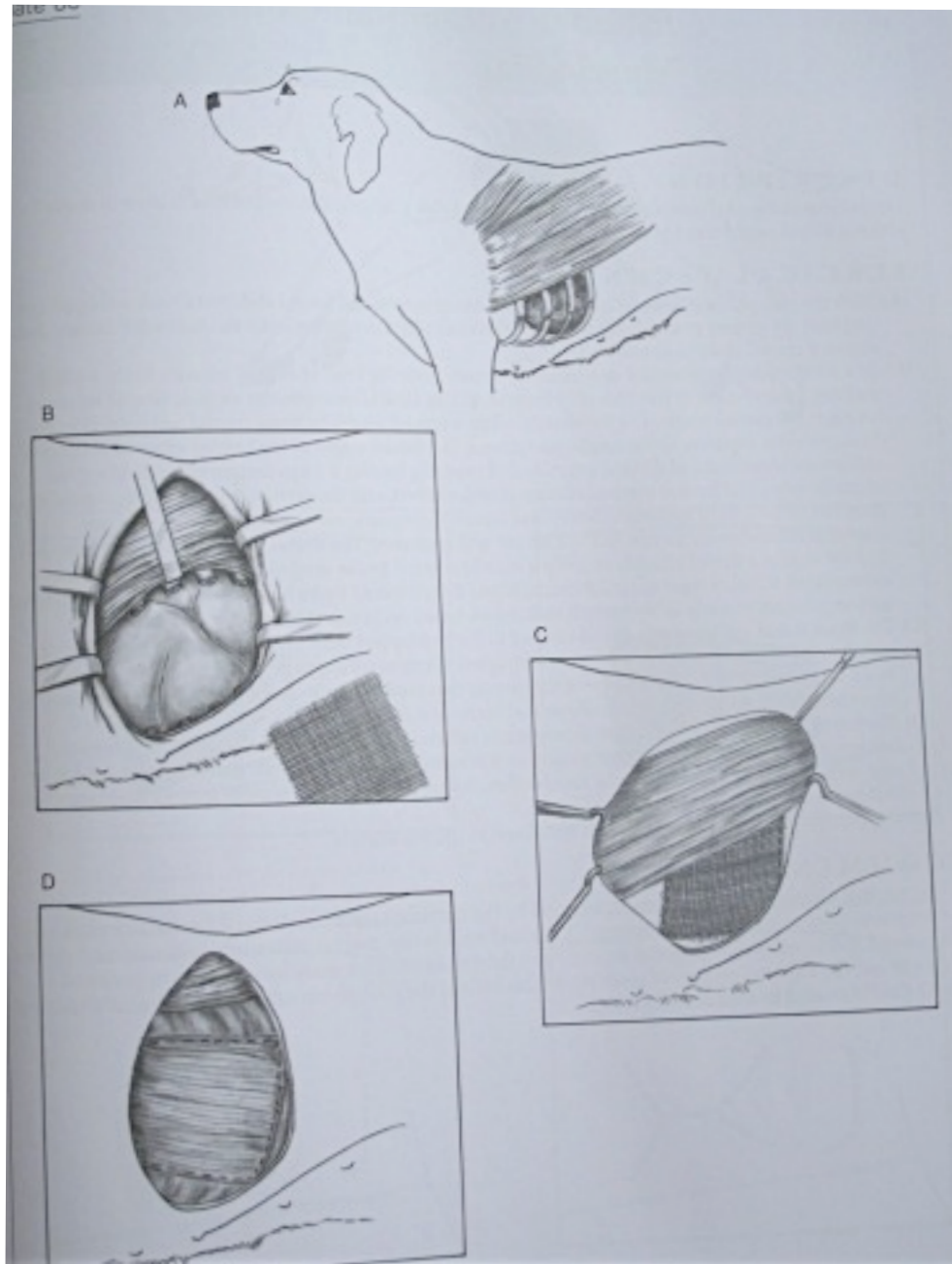




Program, Saturday

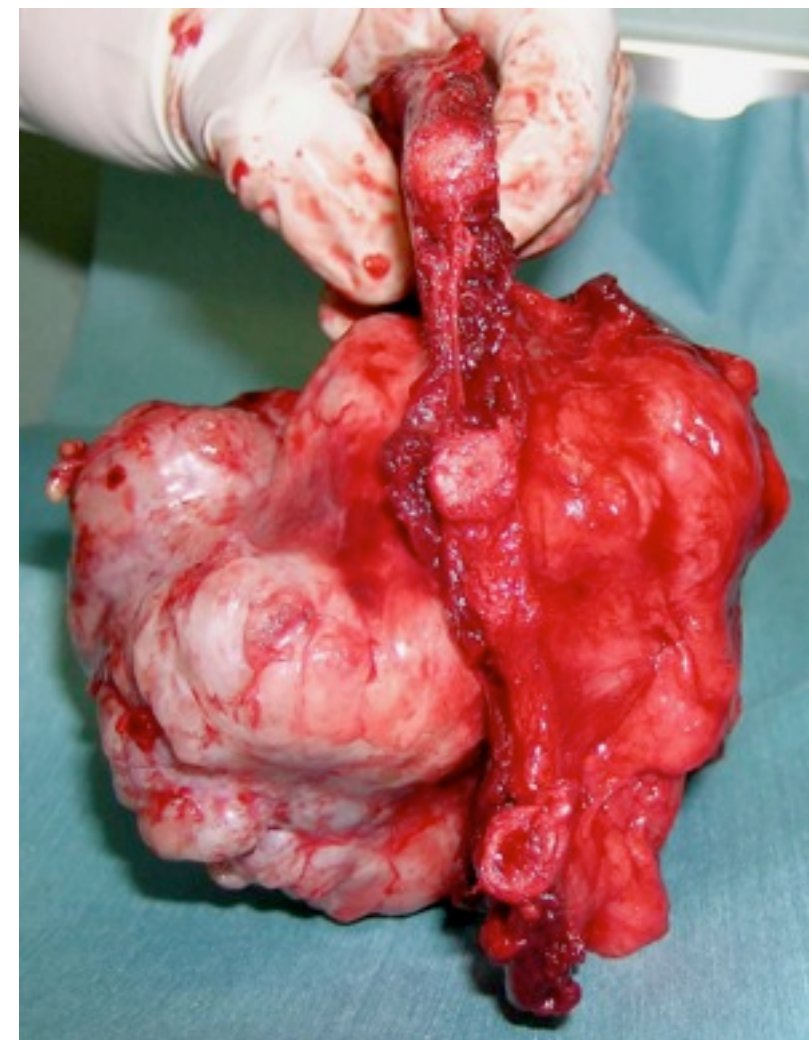
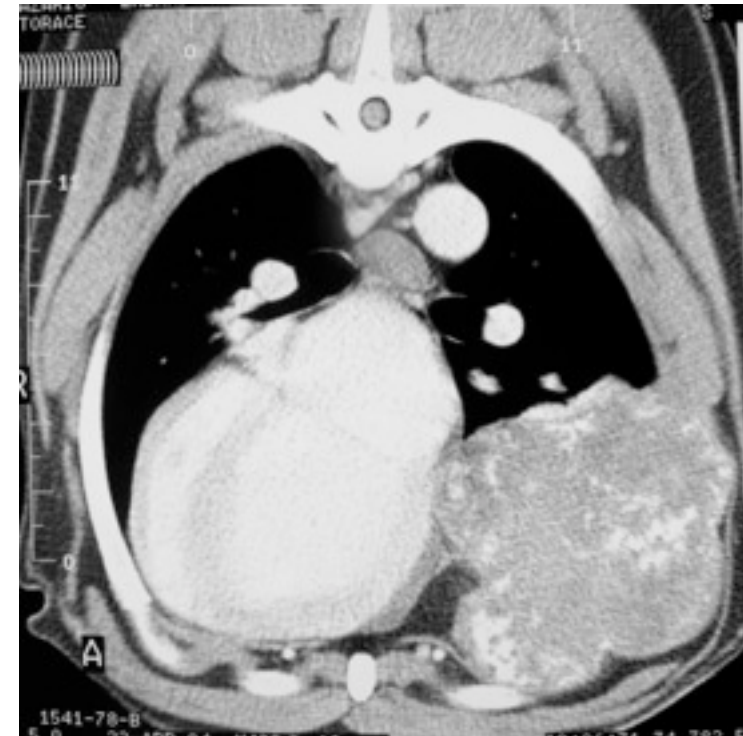
- 16.00 – 17.30/18.00 – muscle and omental flaps (amputation)
- Answering to possible questions

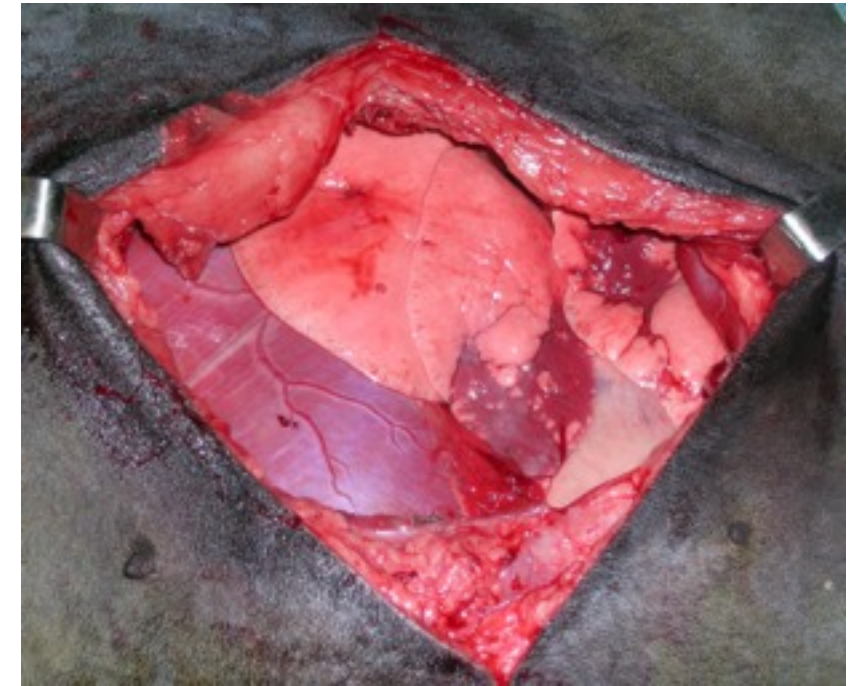
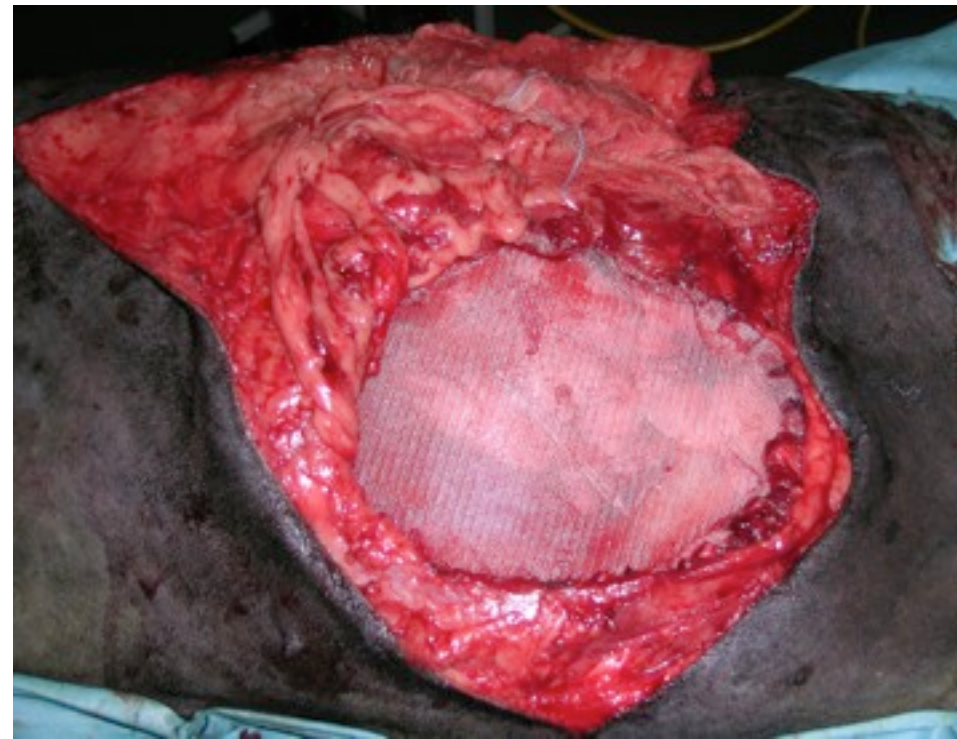
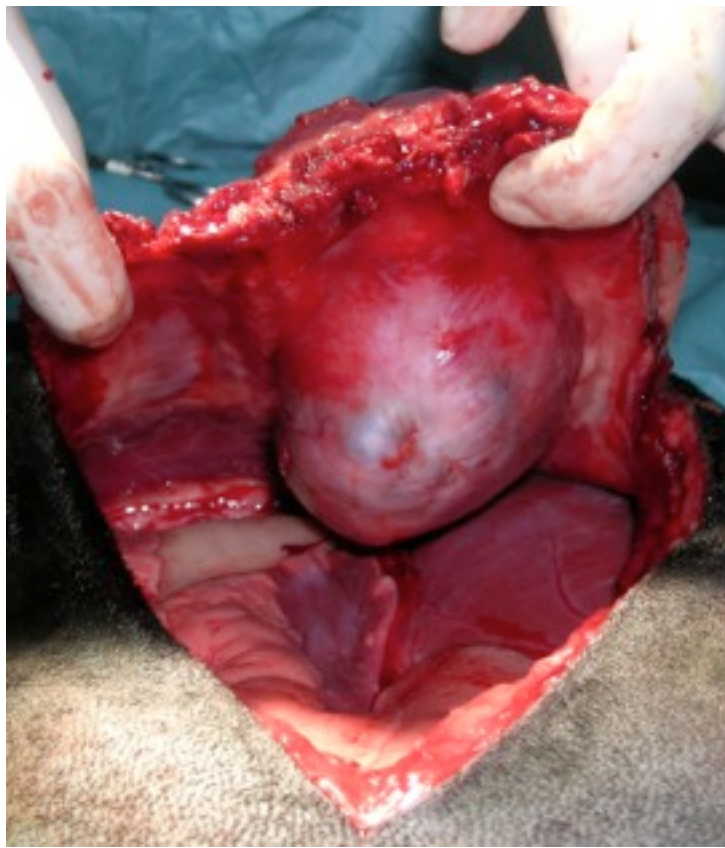
Latissimus dorsi flap



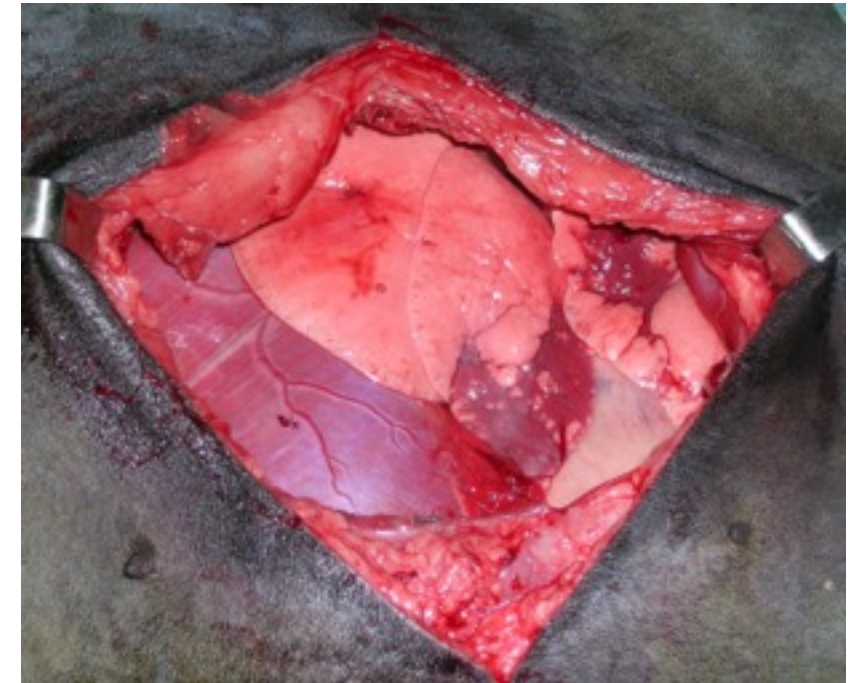
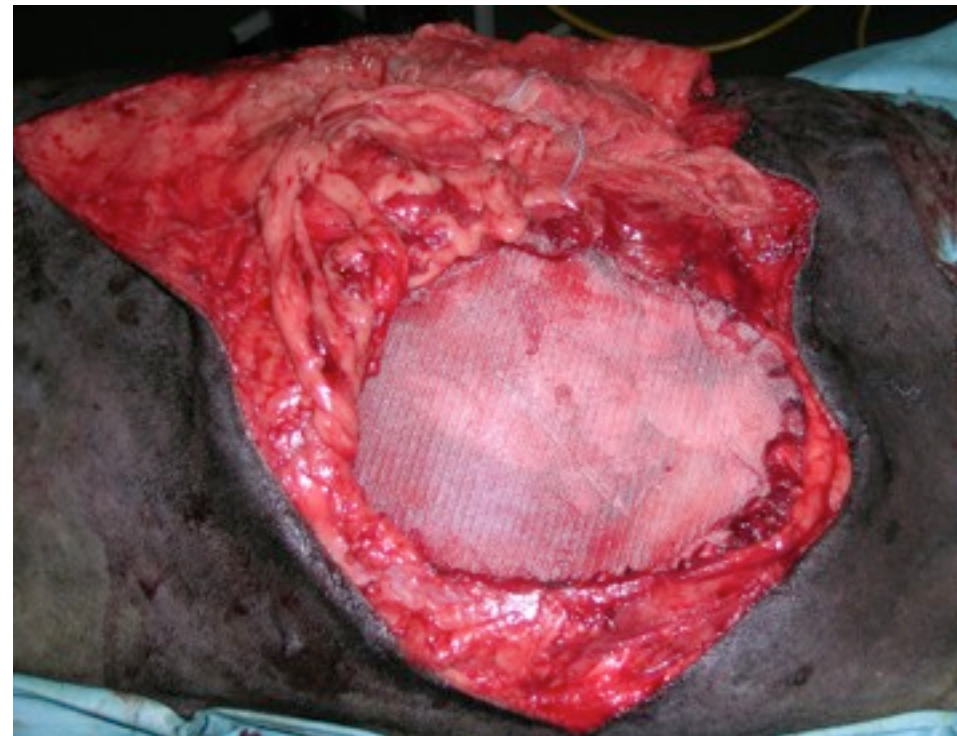
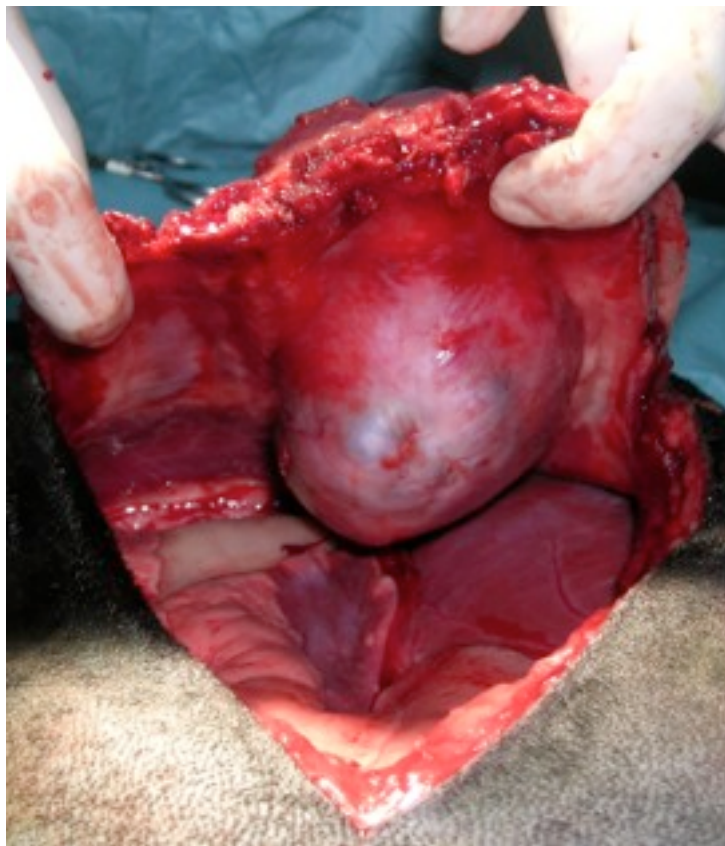
to cover defects of the thoracic cavity

From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

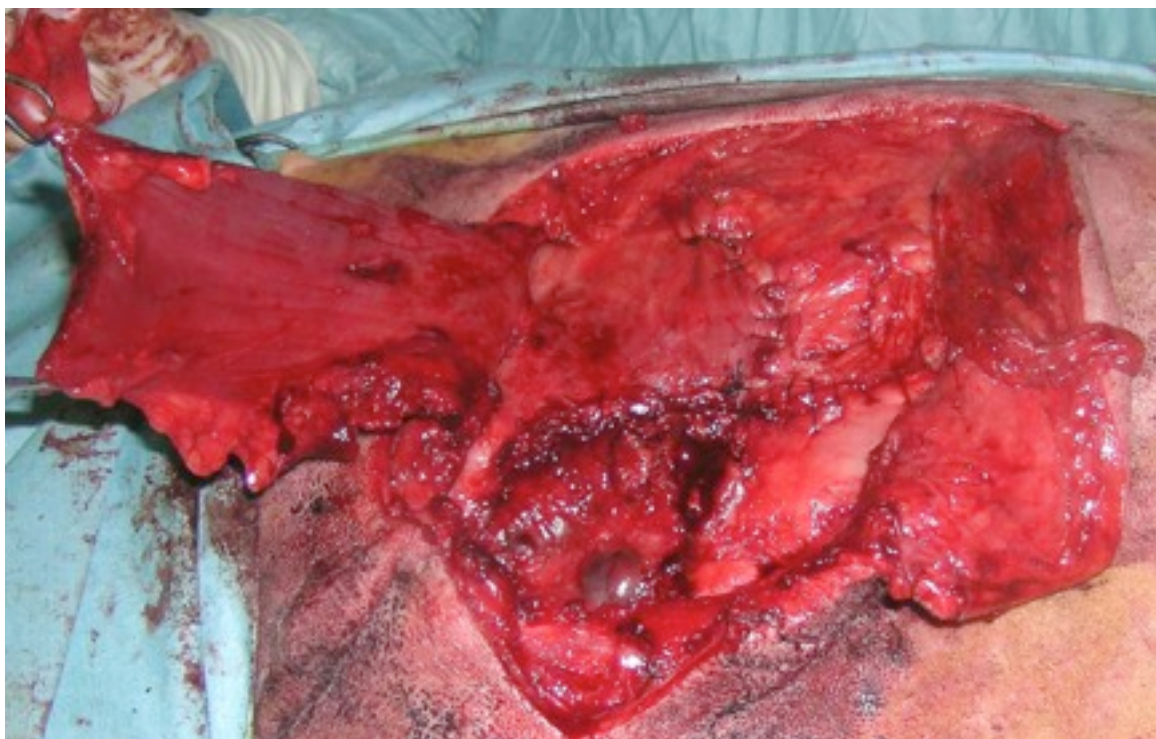


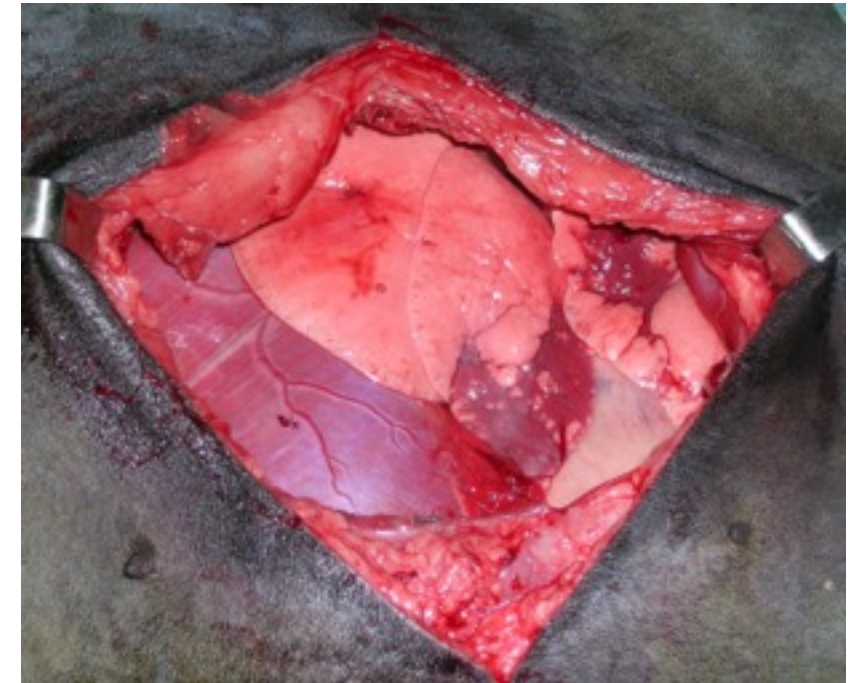
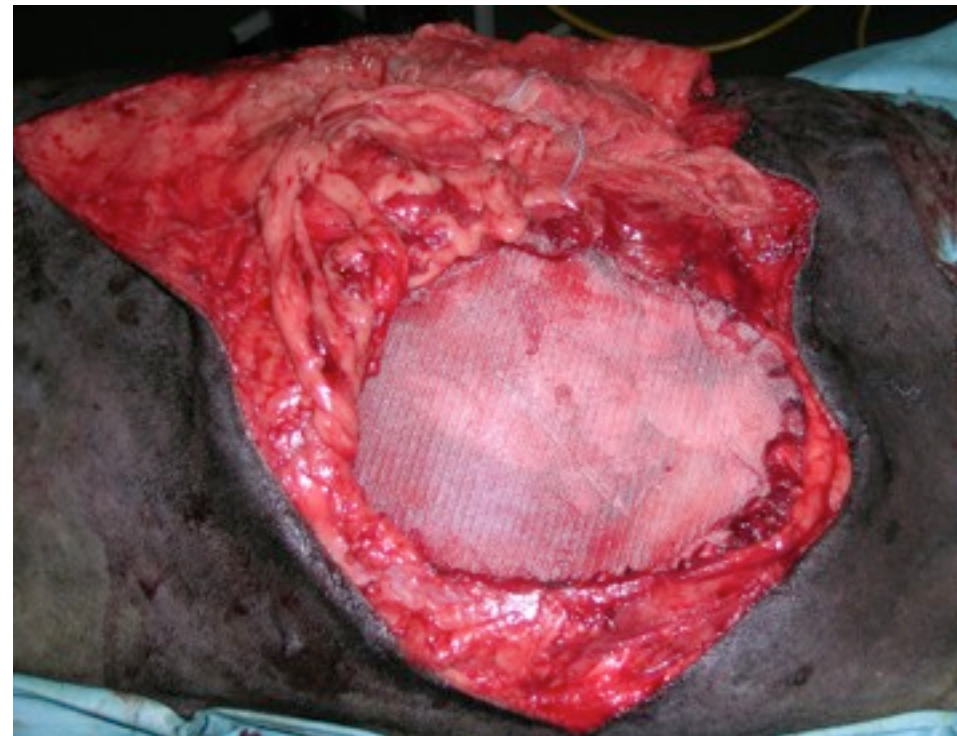
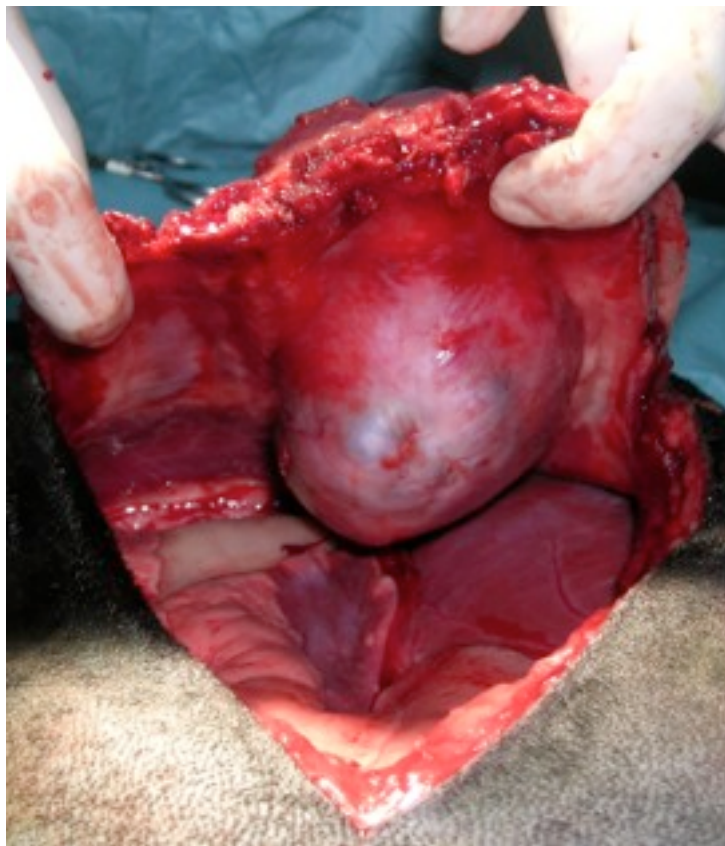


flap of the latissimus dorsi muscle to get an airtight closure

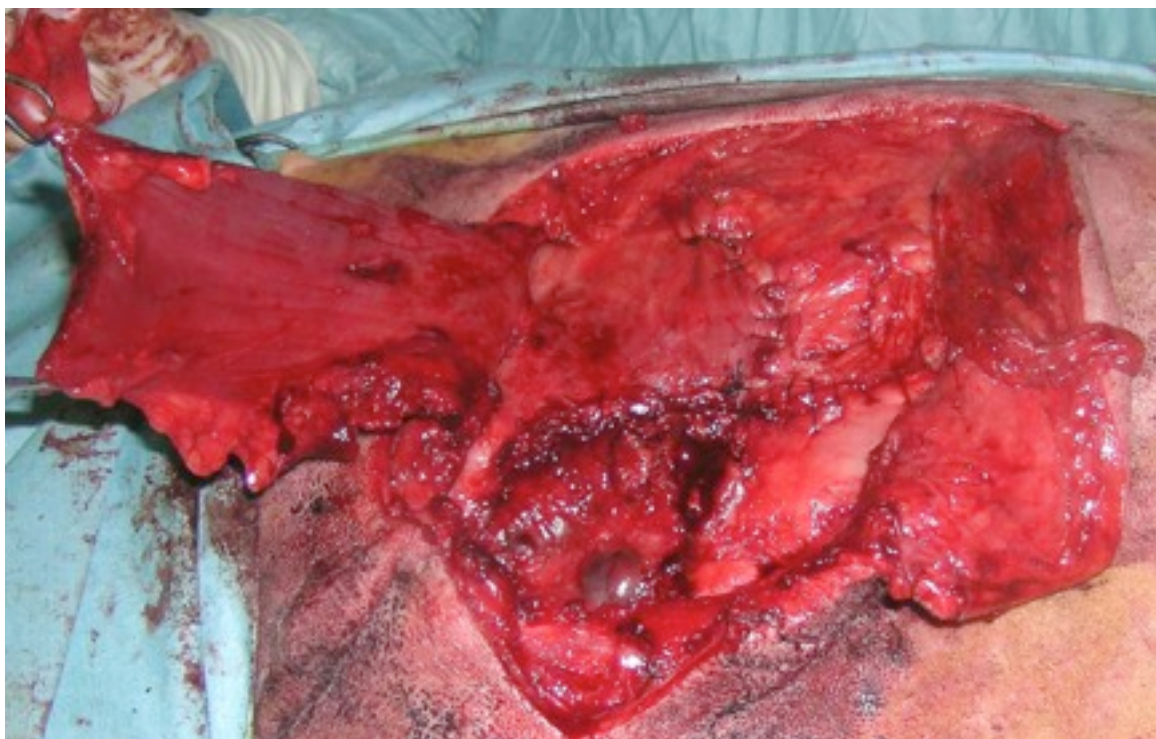


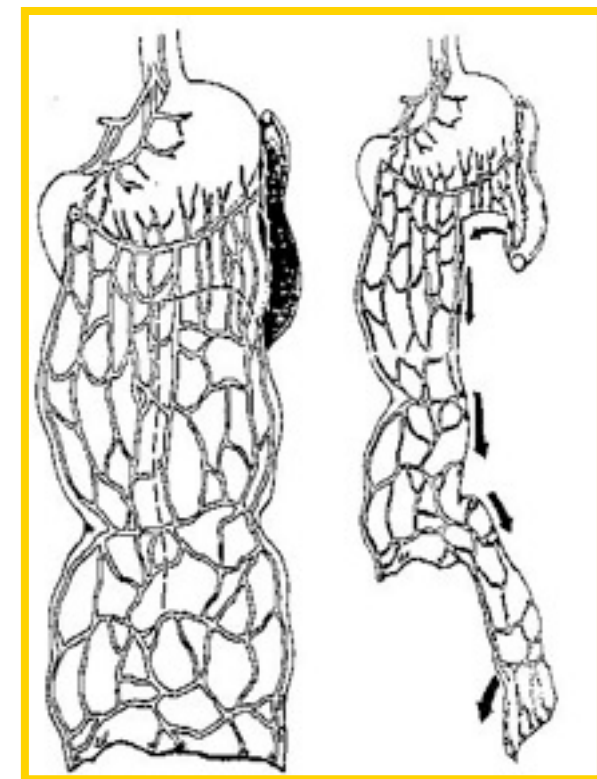
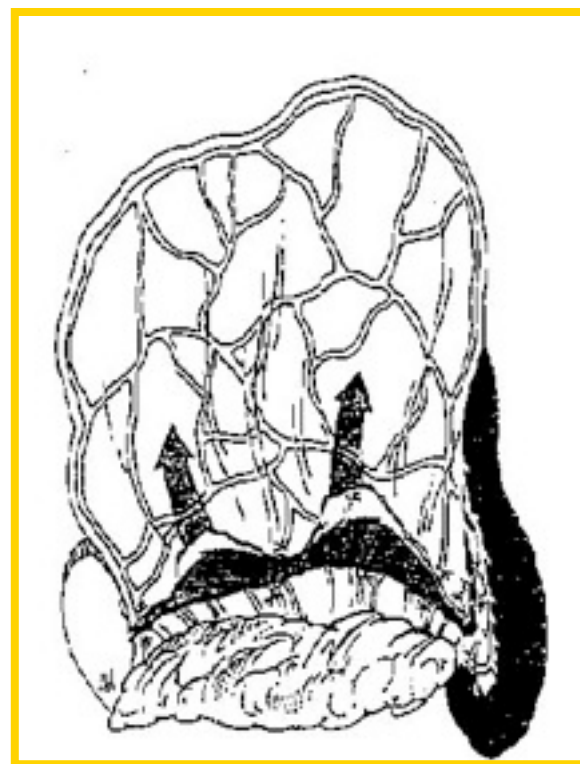
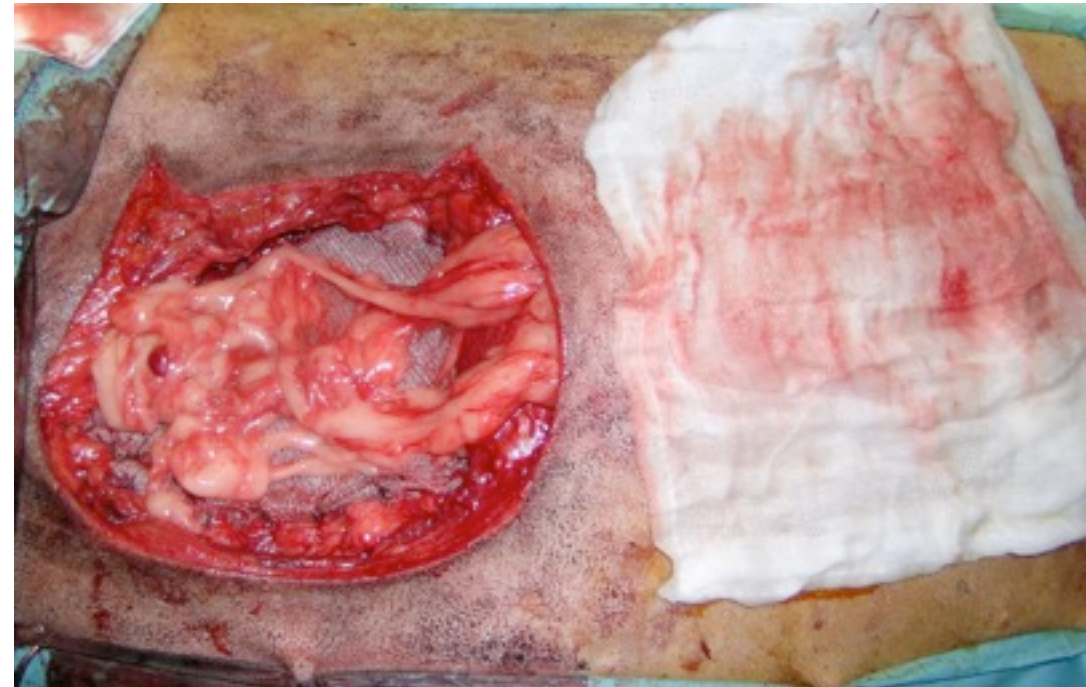
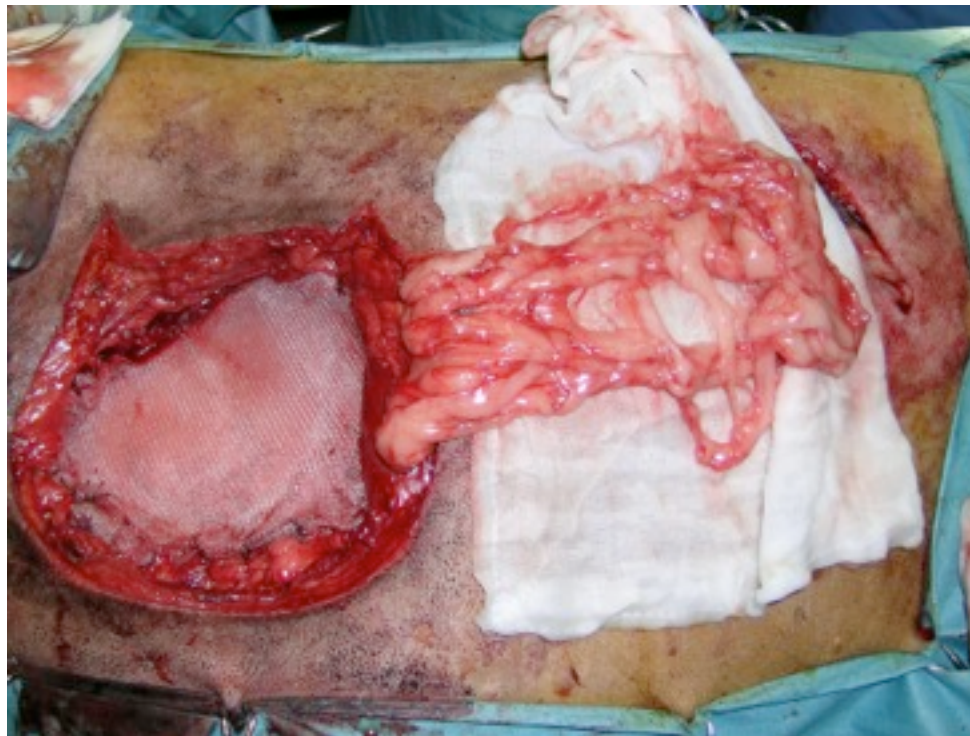
flap of the latissimus dorsi muscle to get an airtight closure





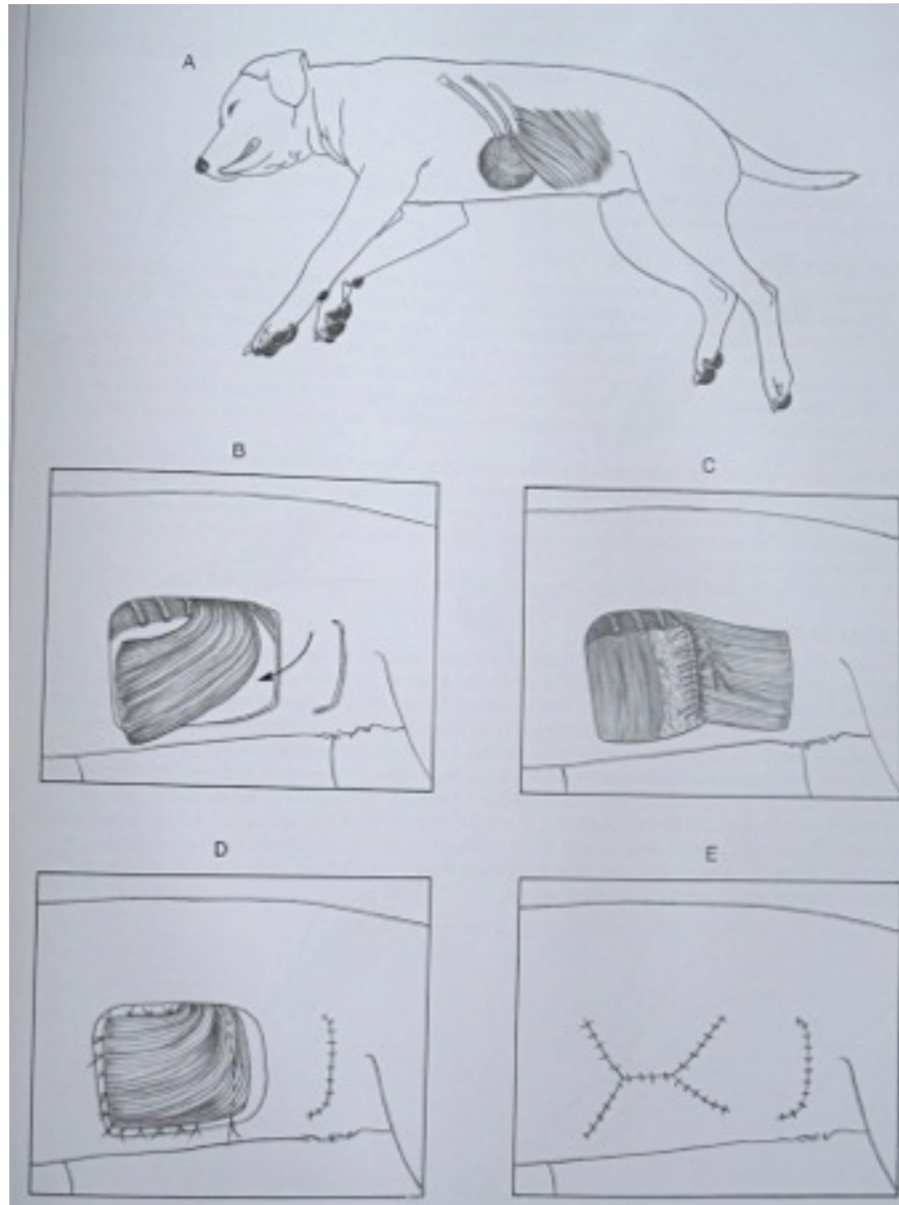
flap of the latissimus dorsi muscle to get an airtight closure





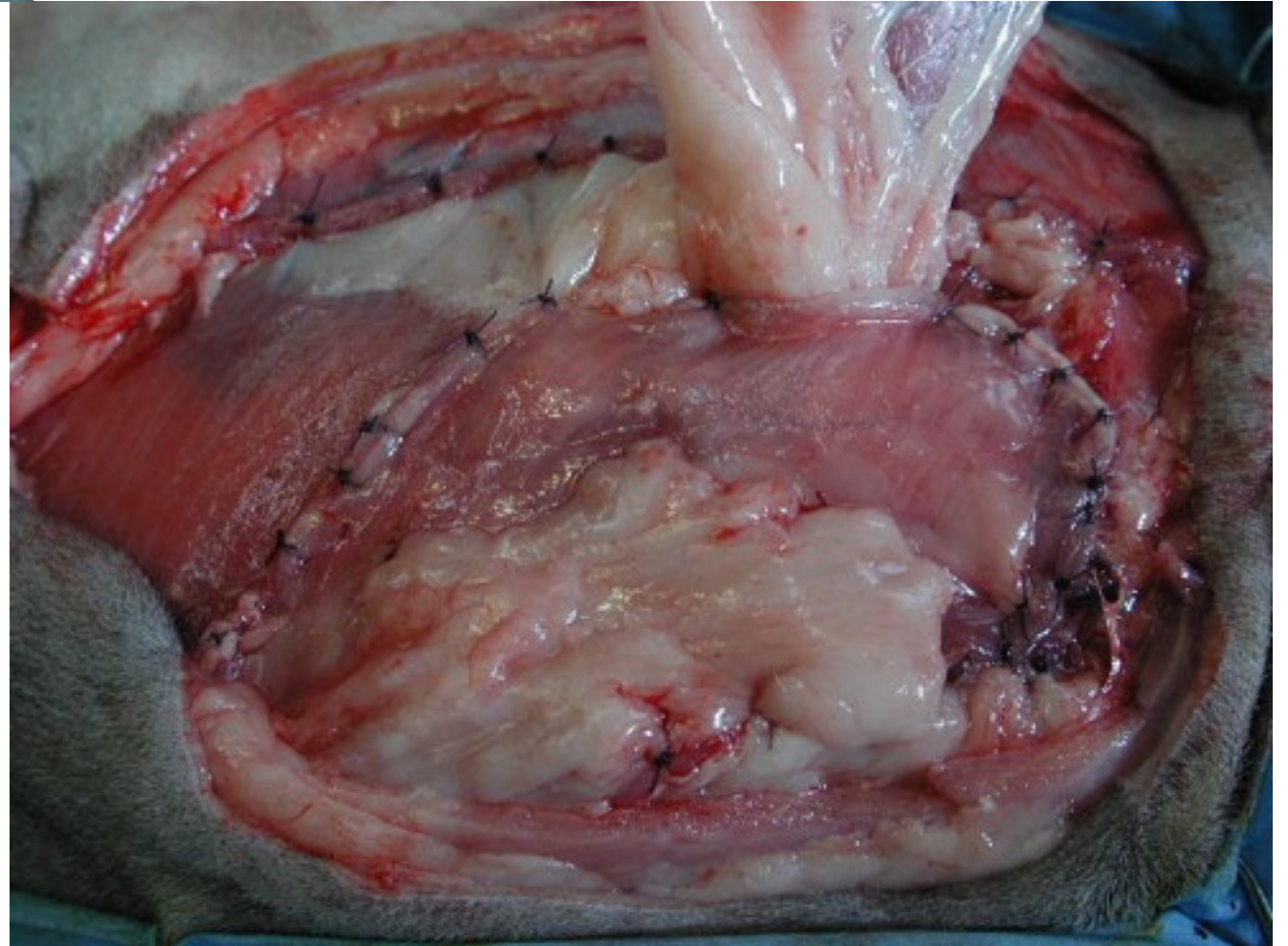
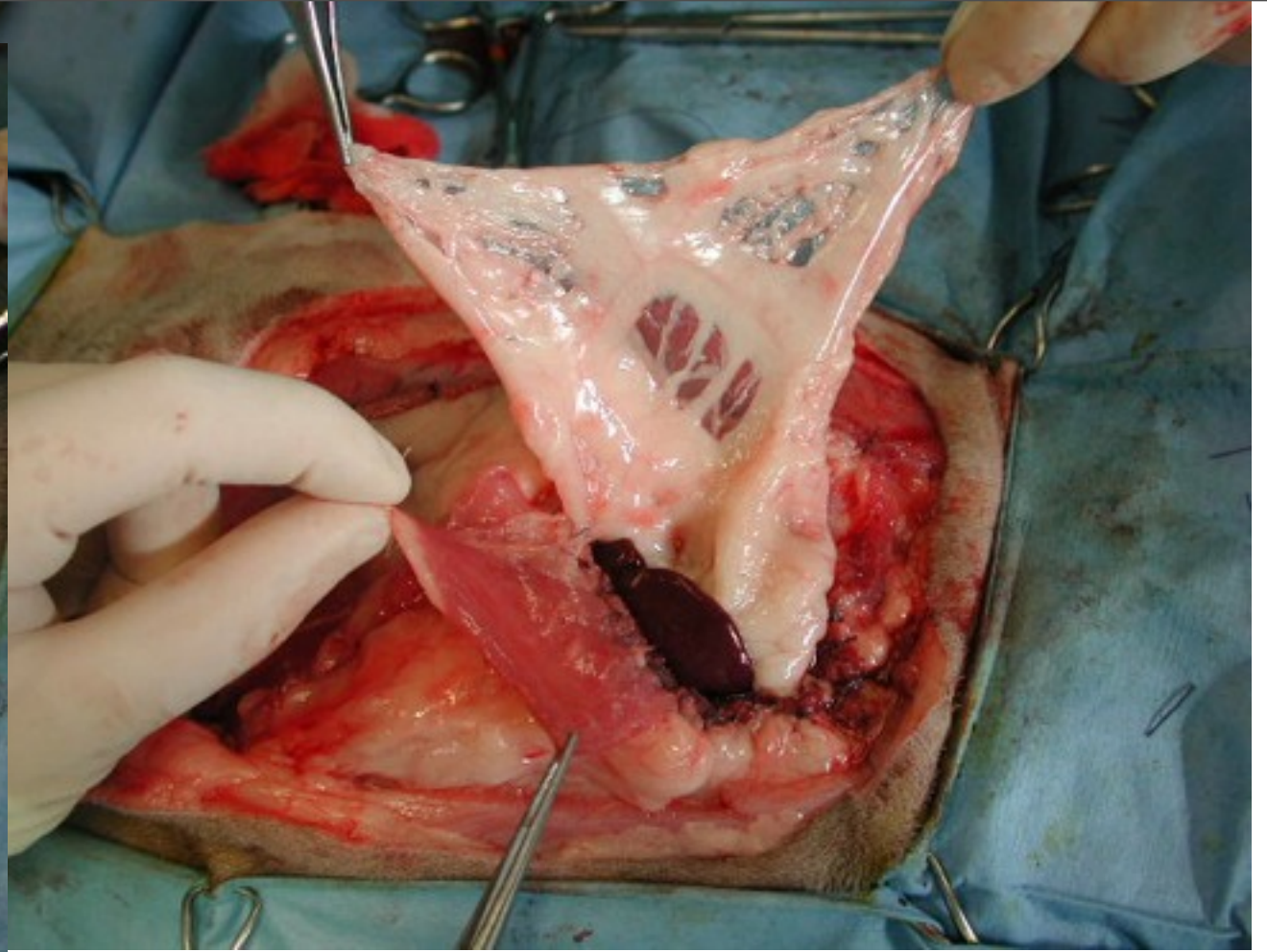
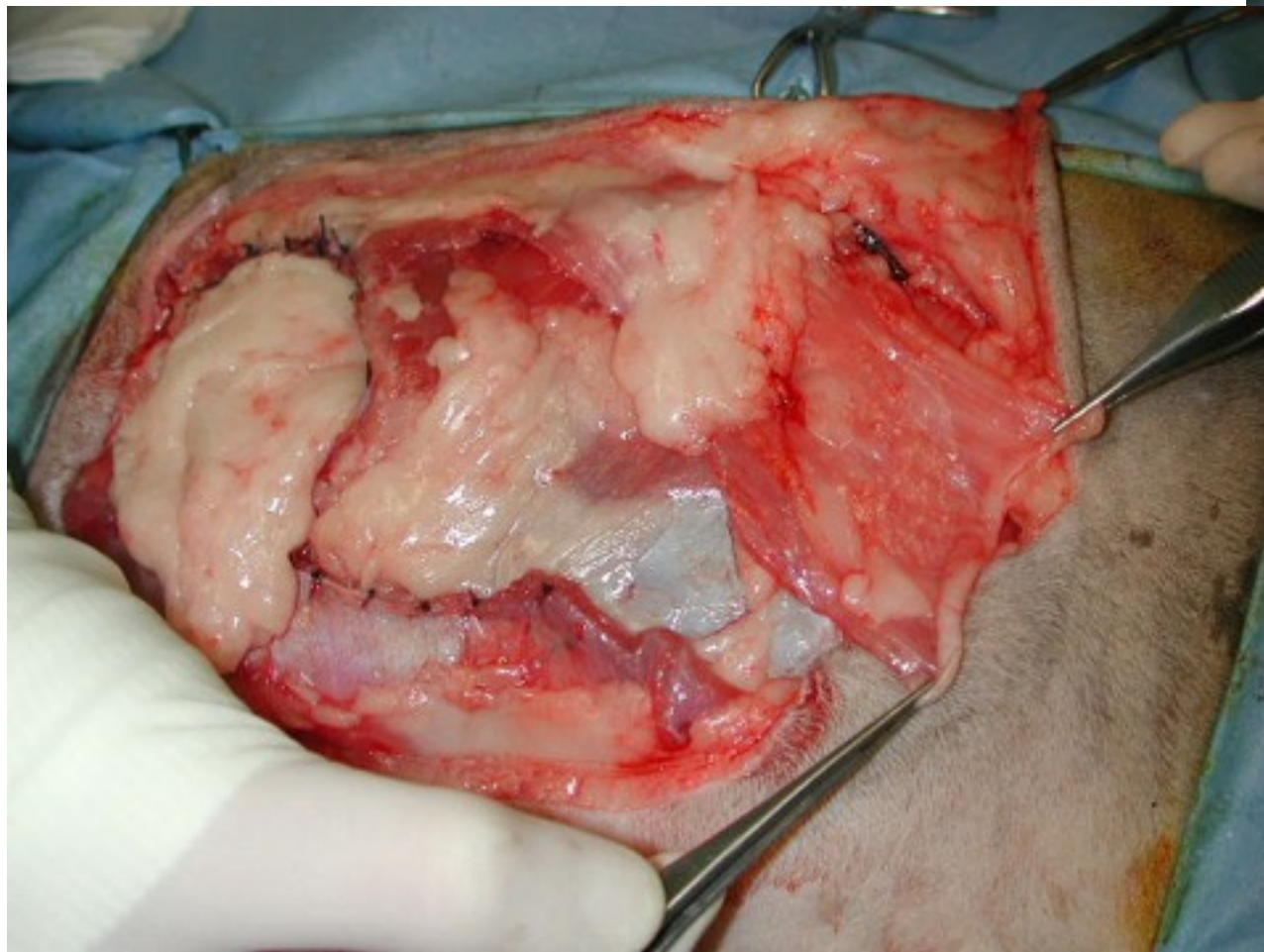
(Ross, Vet Surg 1993)

Flap of external oblique muscle



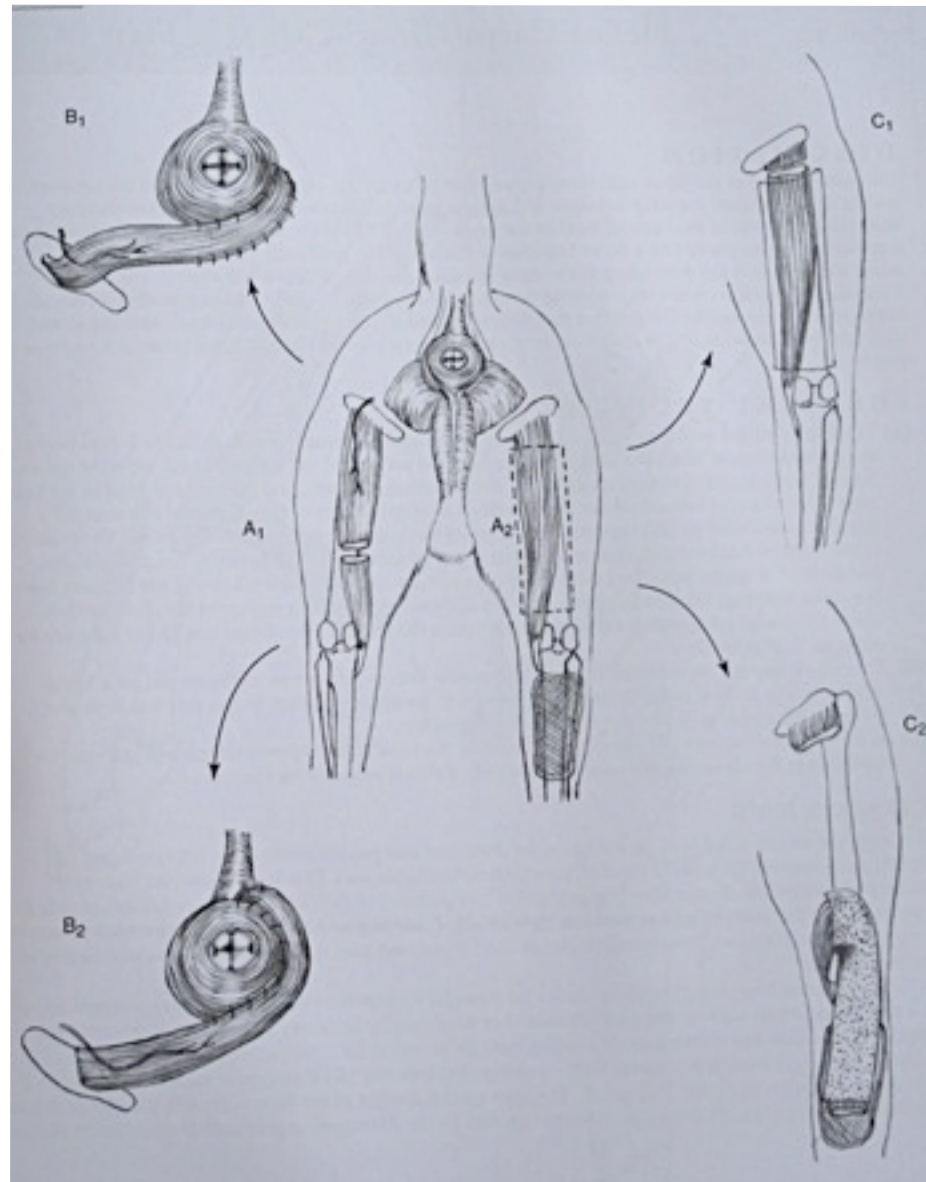
From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

to cover defects of the abdominal cavity

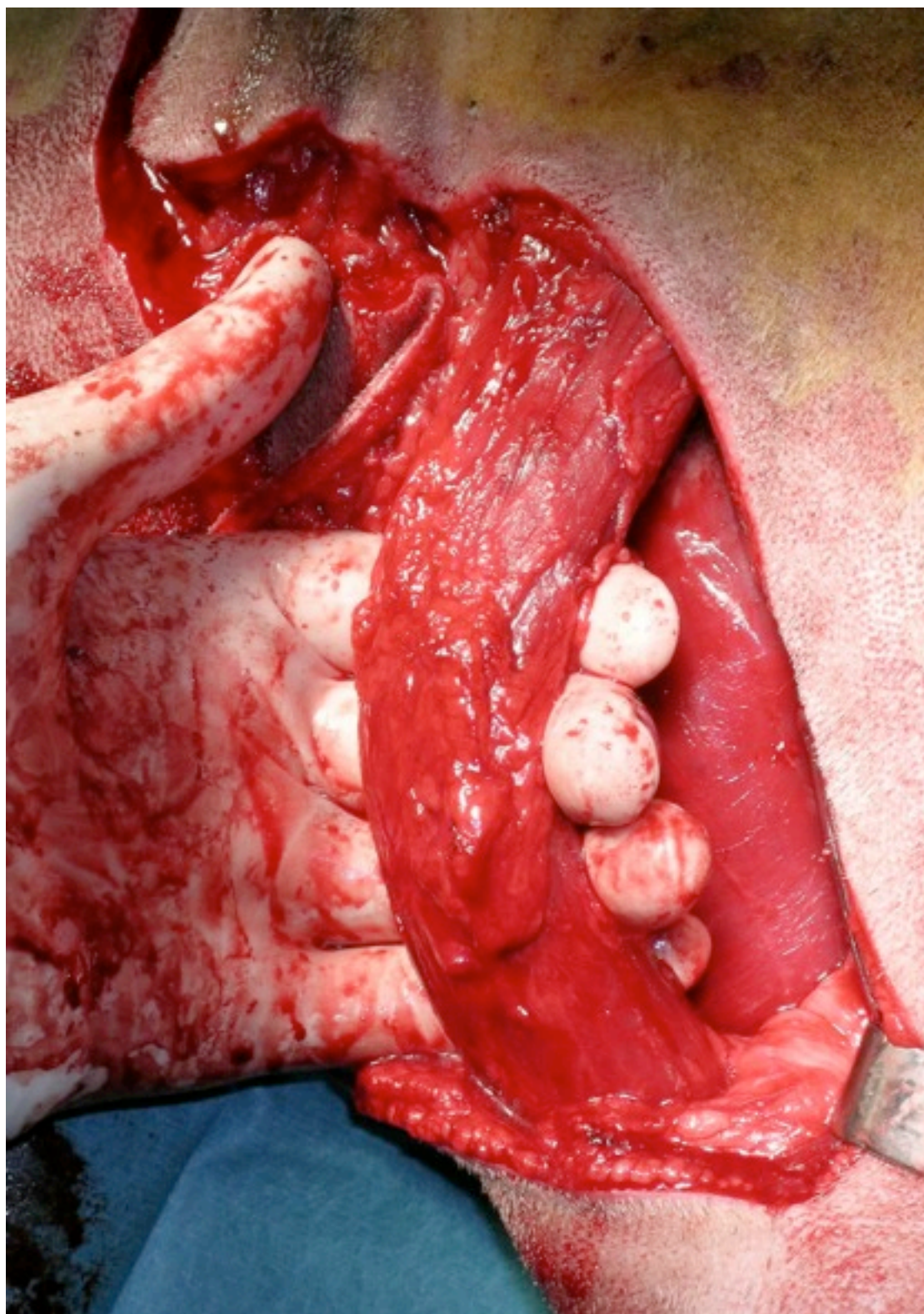


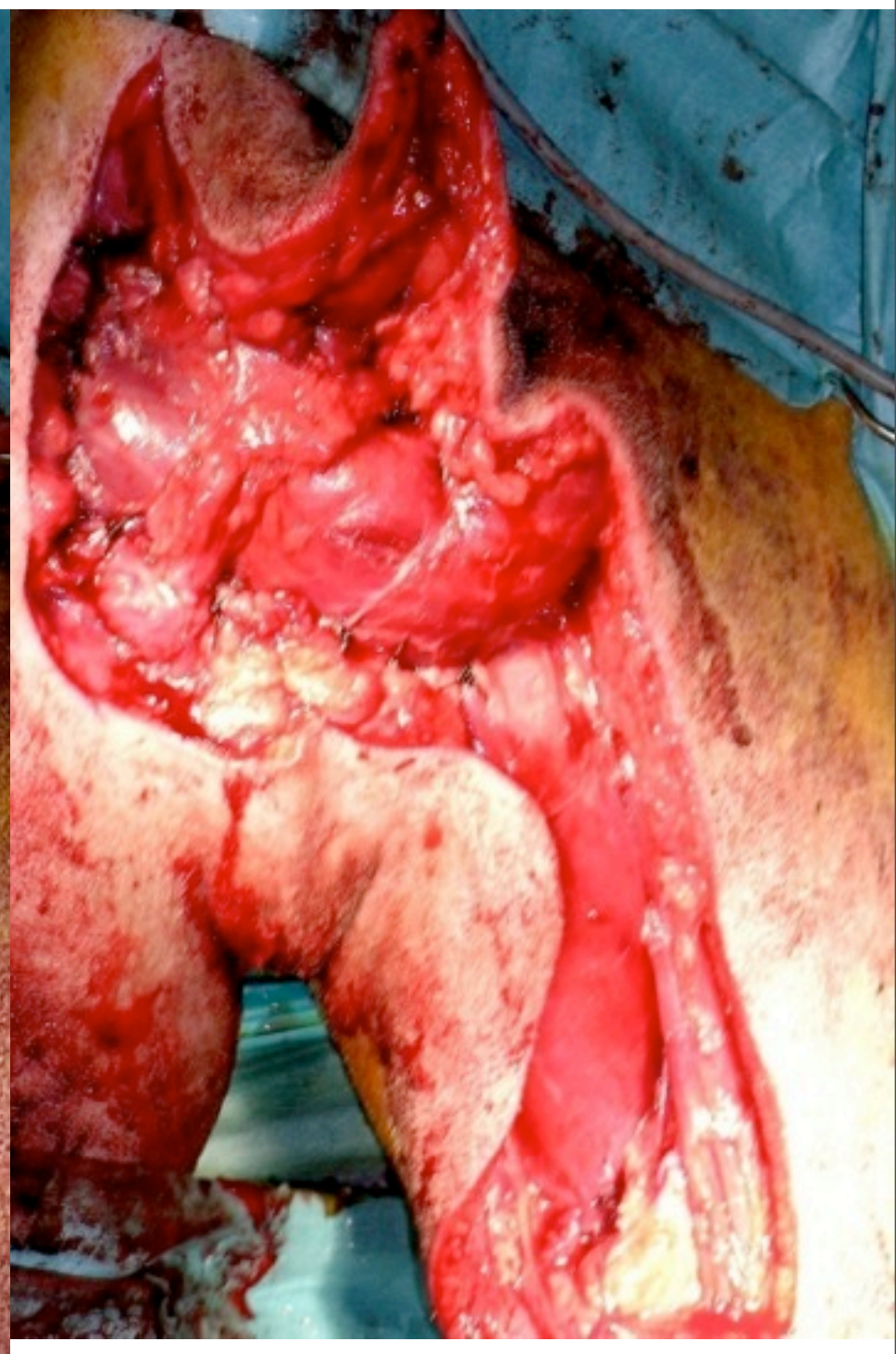
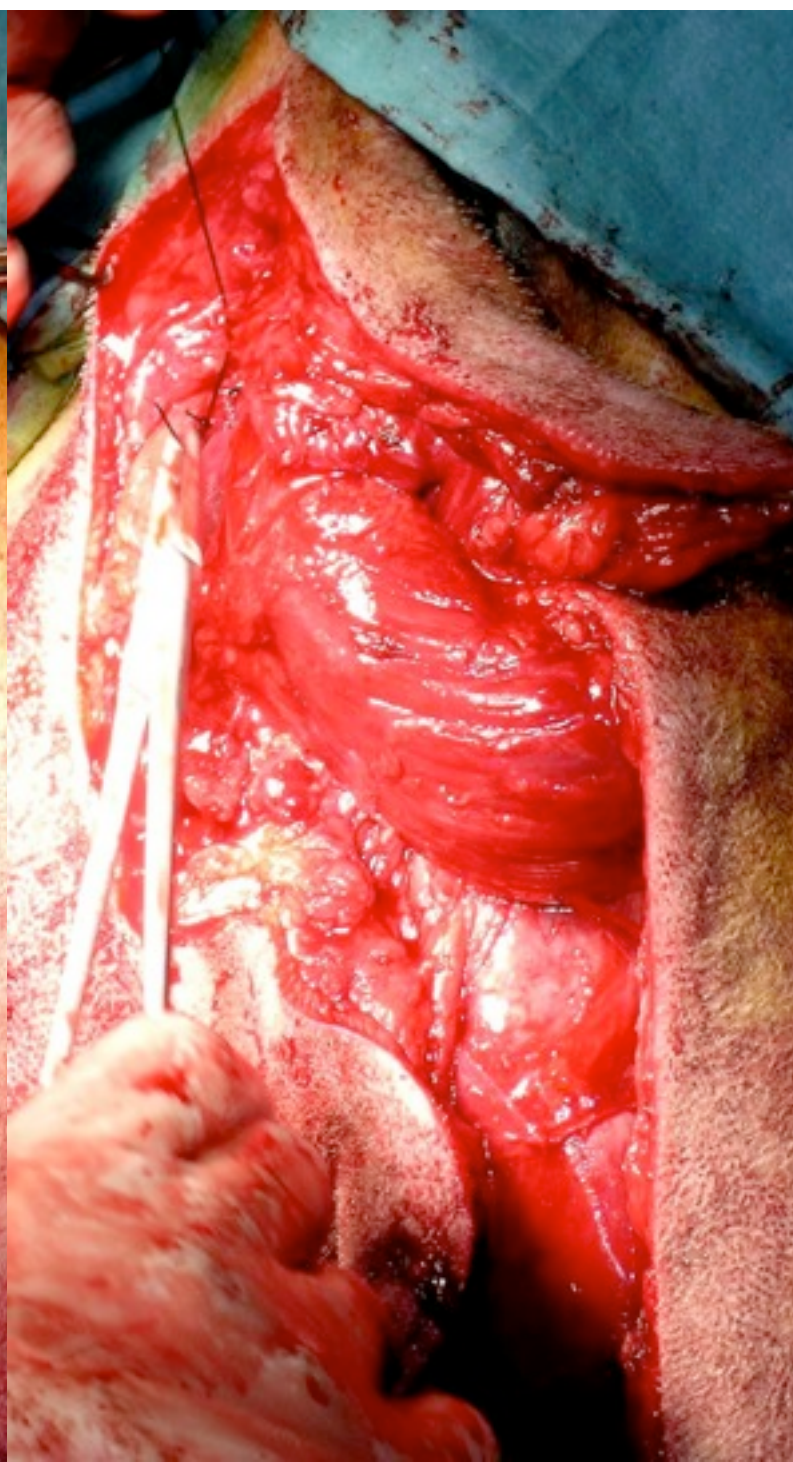
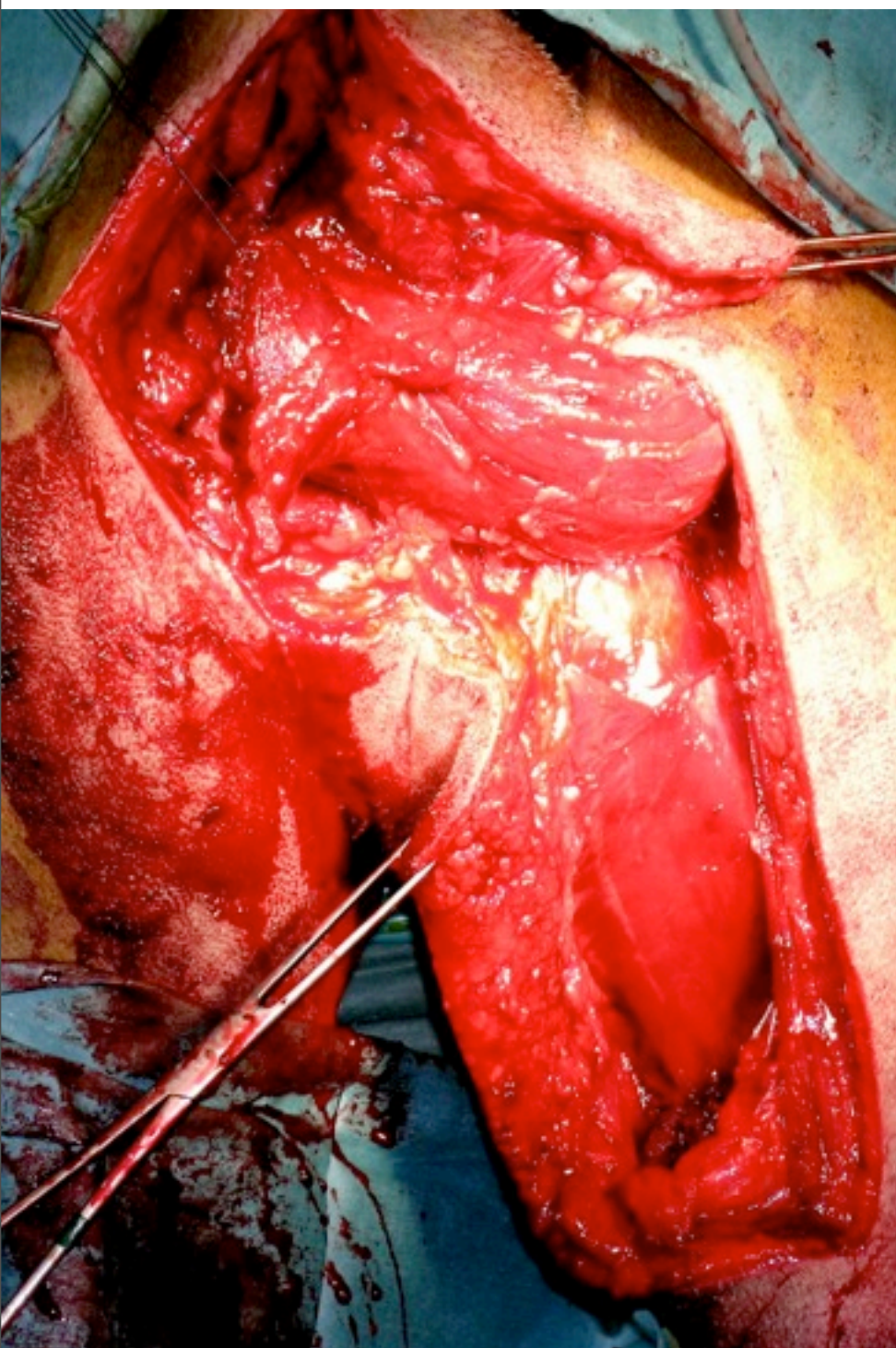
Lembo Myocutaneous or muscular flap of the semitendinosus muscle

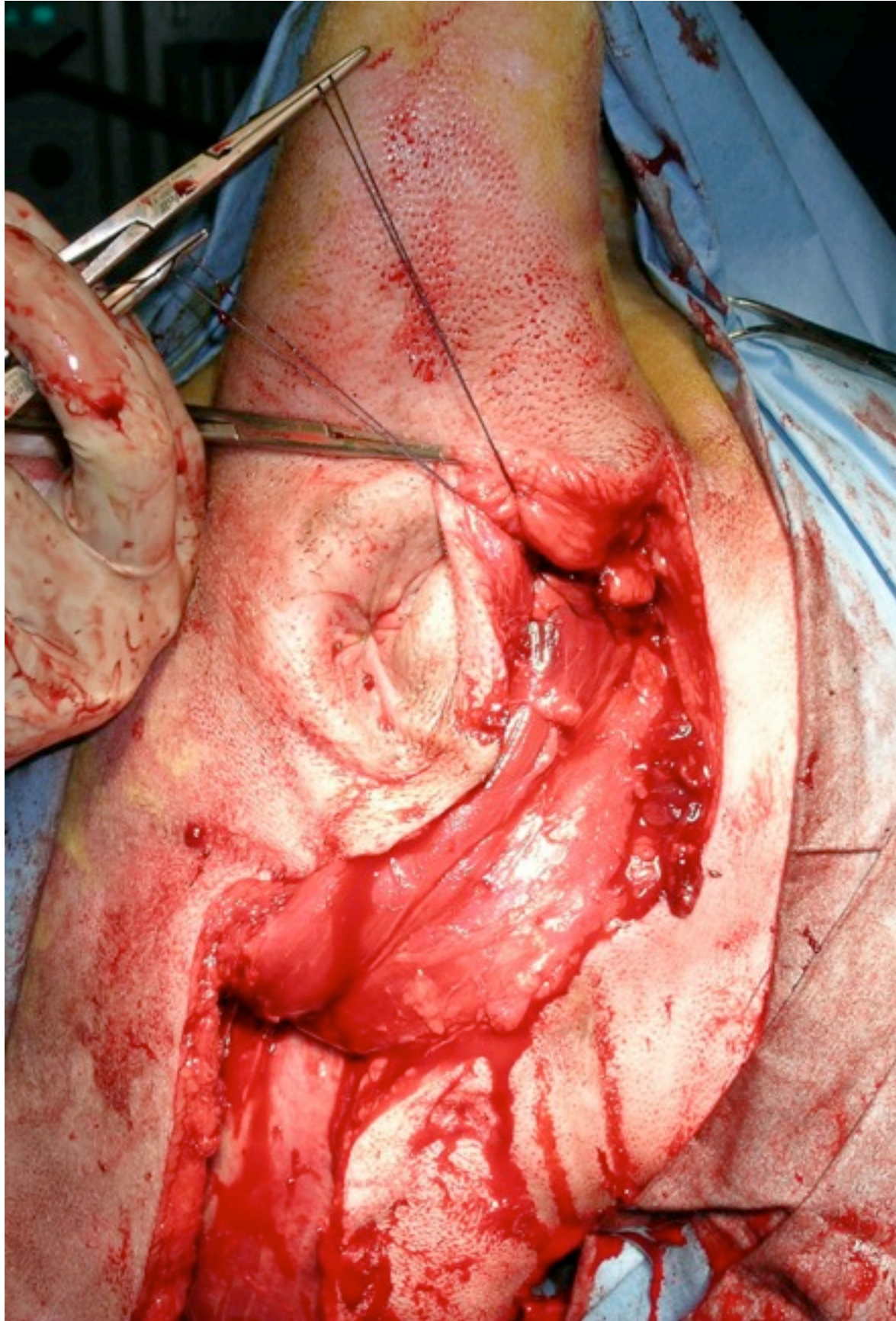
From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
W.B. Saunders C, 1999, 2010

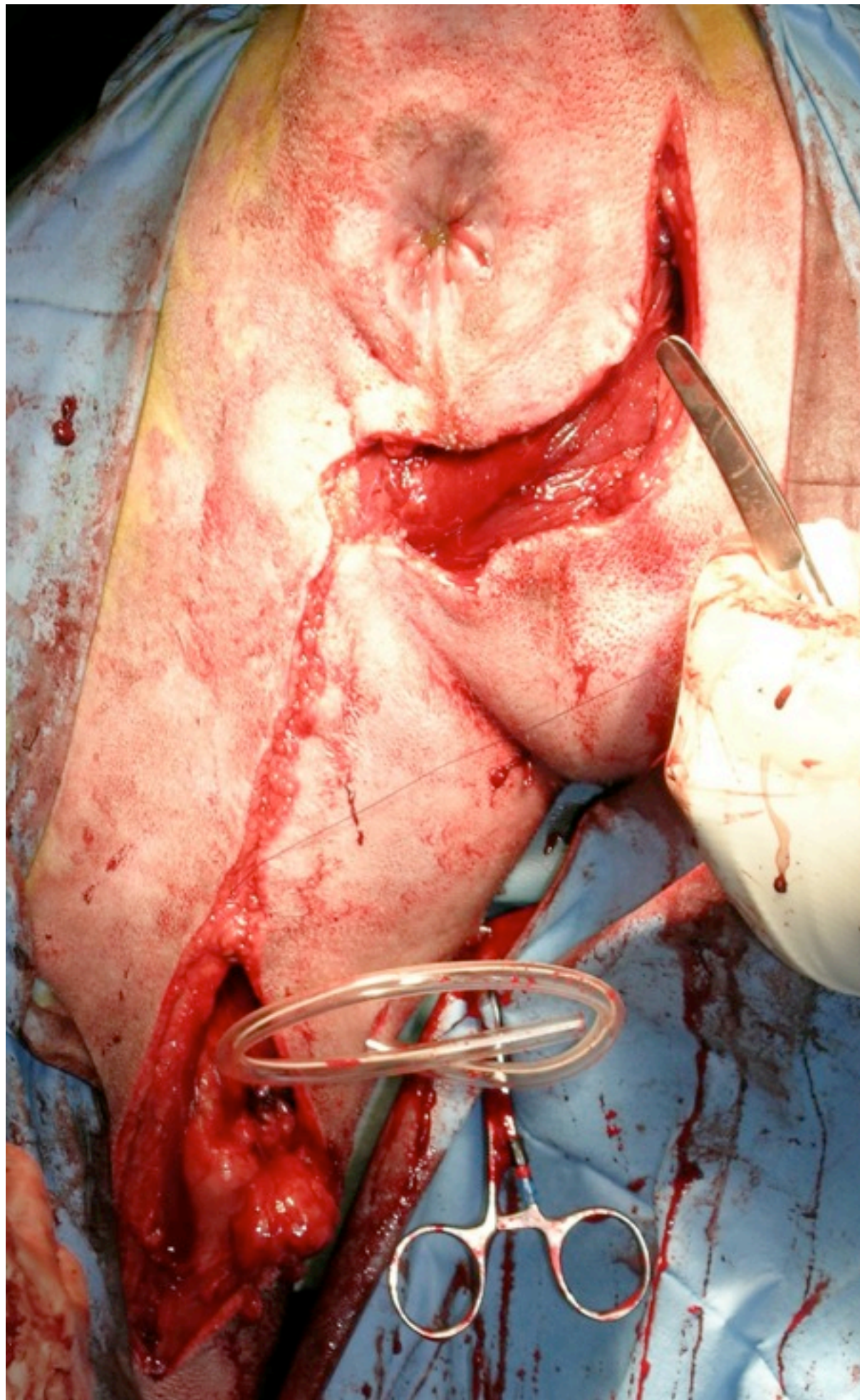


Mainly in
perineal hernia









FACE / HEAD

EXAMPLE OF

- advancement flap
- rotating flap
- axial pattern flap

FOR TRAUMATIC O AFTER TUMOR EXCISION

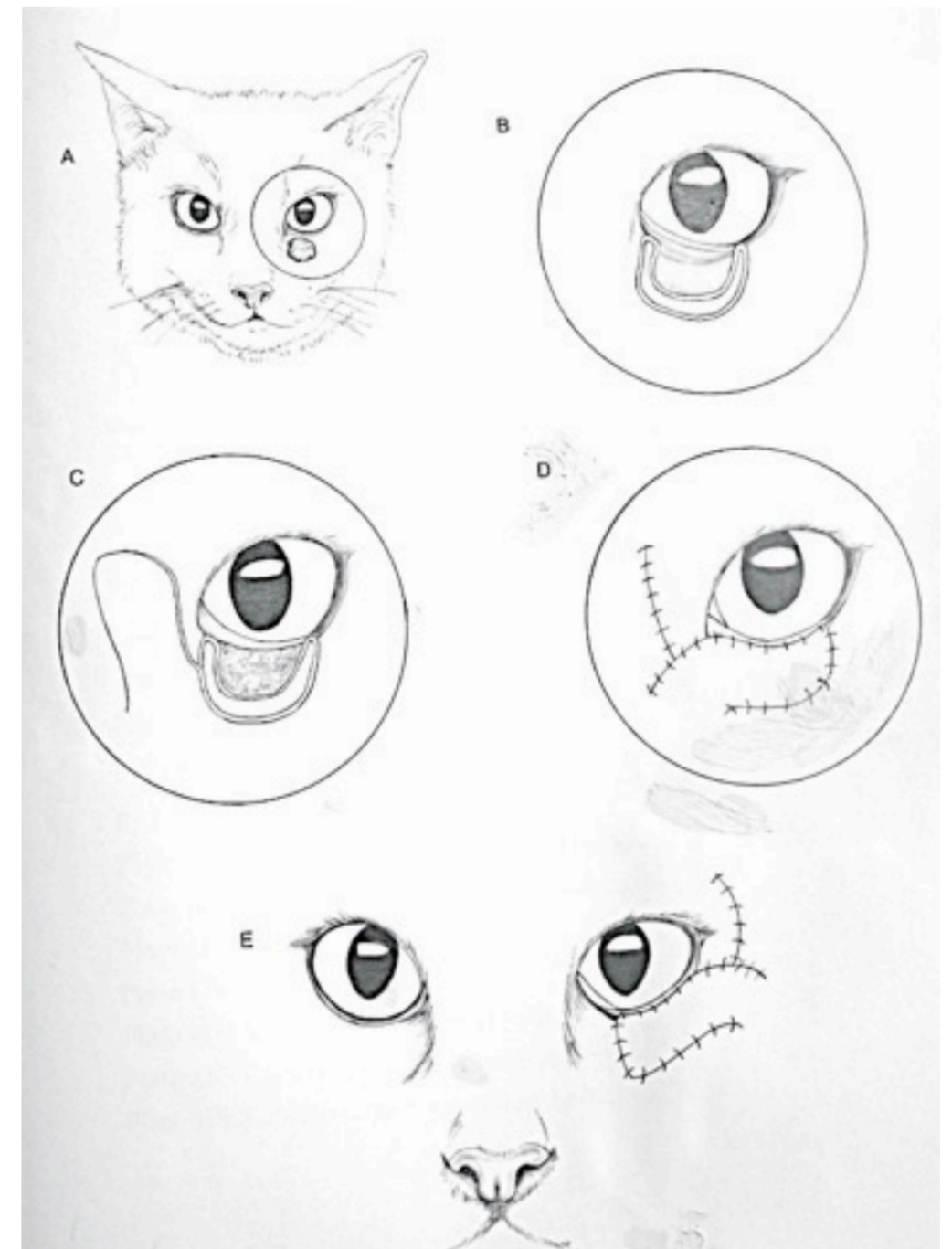
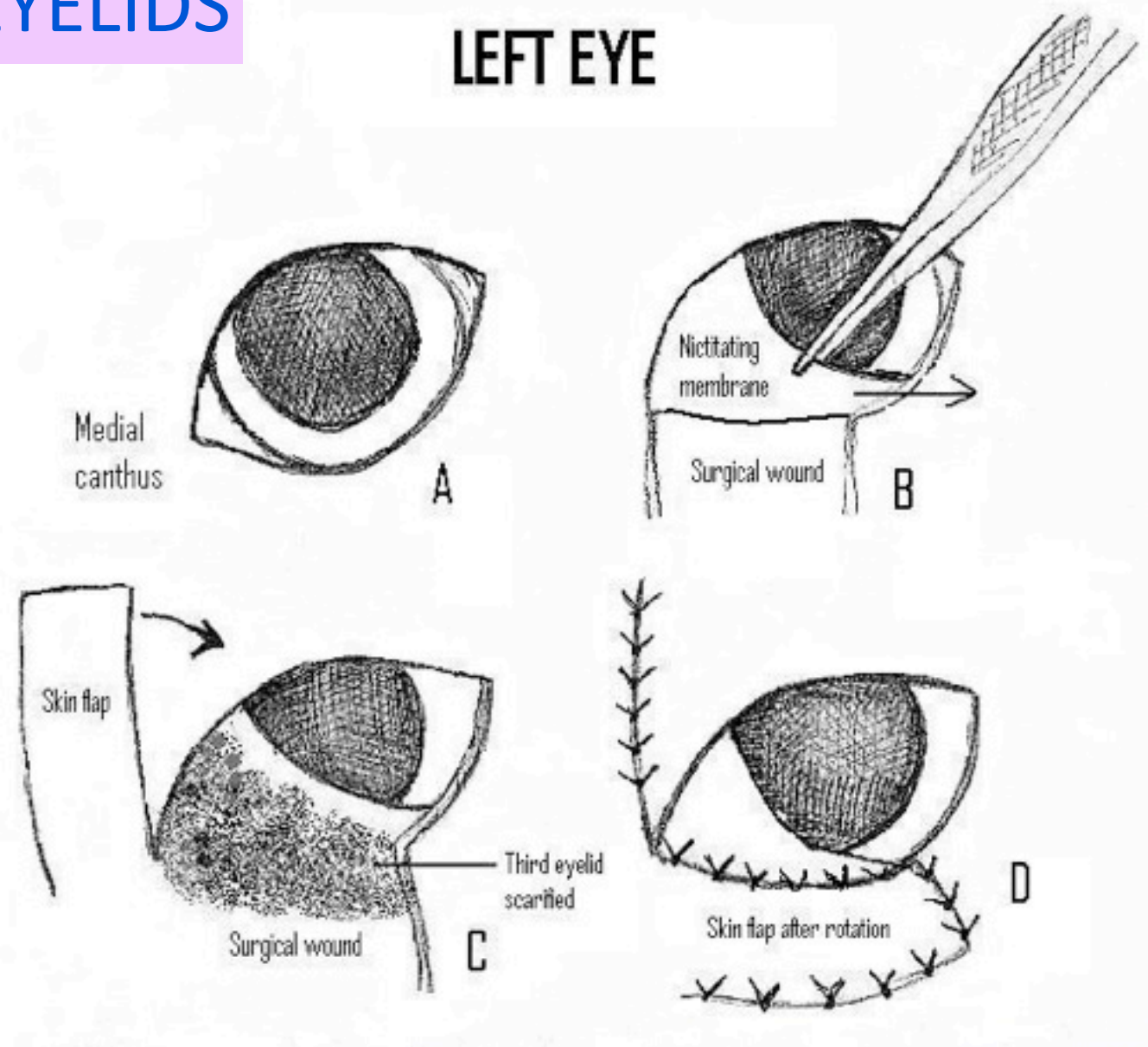
Frontal region

Nasal region

Eyelid

Lip and Cheek

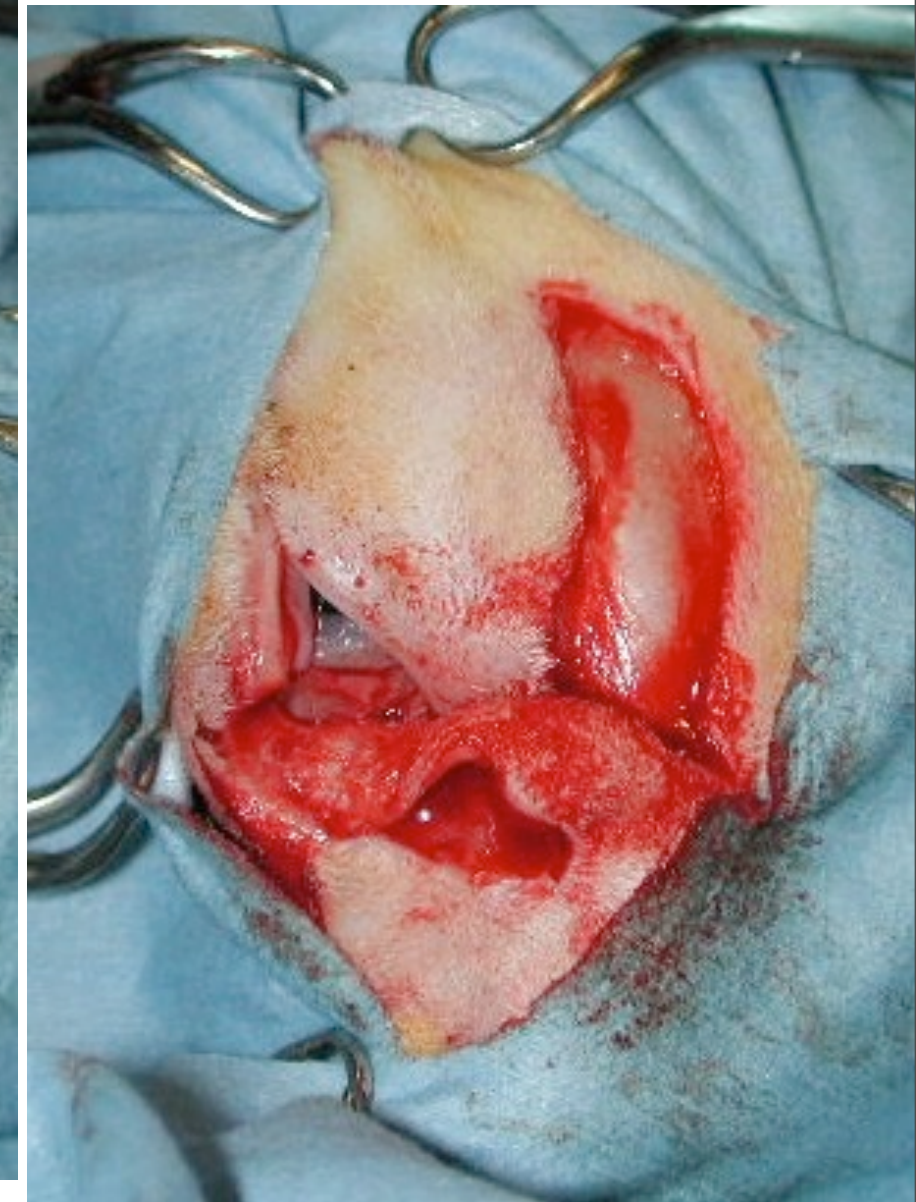
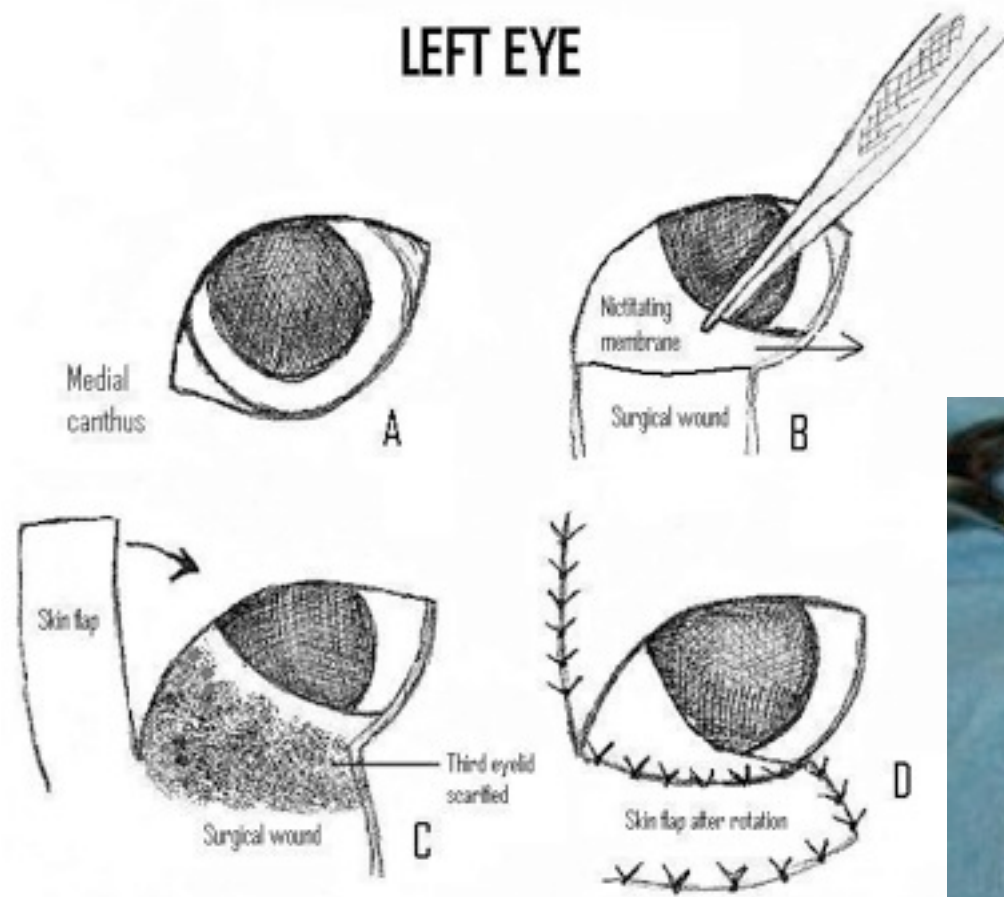
EYELIDS



Schmidt K., Bertani C., Martano M., Morello E., Buracco P.
Reconstruction of the Lower Eyelid by Third Eyelid Lateral Advancement and Local Transposition Cutaneous Flap after “en bloc” Resection of Squamous Cell Carcinoma in 5 Cats. Veterinary Surgery 34:78-82, 2005

third eyelid-skin flap
 reconstruction of the lower
 eyelid

LEFT EYE



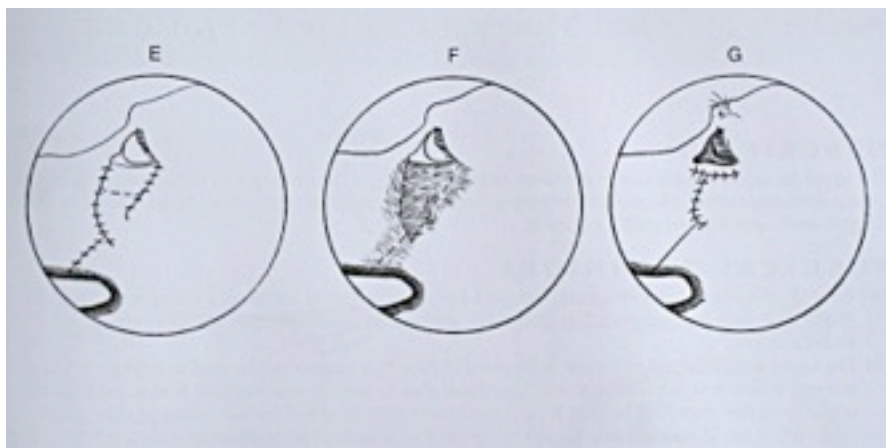
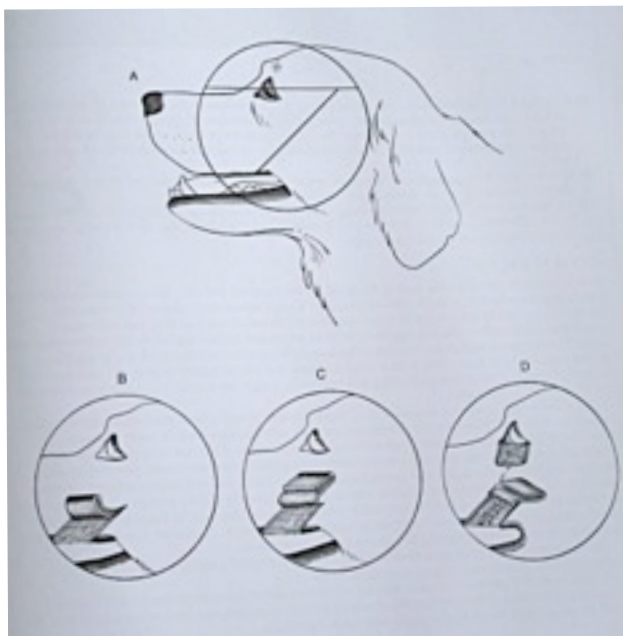


15 months later





“LIP TO LID”



From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010



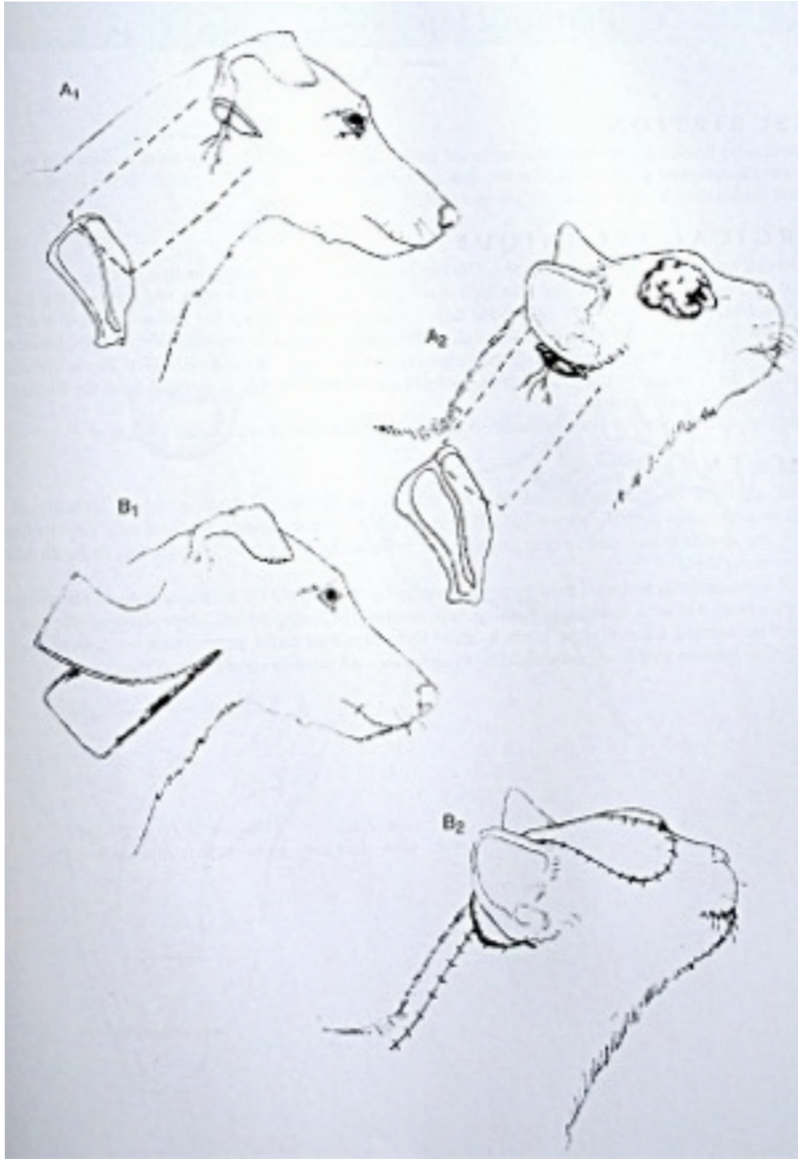


Caudal auricular axial pattern flap

For defects of the
head and face
(frontonasal)

It is centered over the dorsolateral neck up to the caudal lower part of the pinna

The base is at the level of the atlas wing and its undermining should include platysma



From Pavletic MM,
Atlas of Small
Animal Reconstructive
Surgery, 2nd edition,
WB Saunders C, 1999, 2010

