Surgeries Summaries

Difference between skin healing and intestinal healing

- Collagenase breaks down collagen in intestines = more prone to dehiscence. Most likely in 3-5 day mark post SX
- Different bacteria - the more distal in the intestine the more likely you are to get anaerobic bacteria
- More movement of the intestines with food also passing through

Differentiate between ileum and jejunum?

- Anti-mesenteric vessel on ileum

Drains

- Take out after 5 days: because this is when repair phase starts and granuloma tissue forms and it is harder to get the drain out
- Will never get to 0 production because it causes inflammation as a FB
- It itself has negatives as can lead to ascending infection
- Remove drain when <2-4ml/kg/day or character has changed (becomes clear/serosanginous)
- Required because of dead space
- Exit of drain should be covered by bandage at all times to protect from enviro contamination (also shouldn't contact haired skin)
- Place to avoid major vessels and delicate tissues, not placed immediately under the primary incision
- Secure with a Chinese finger trap -> need a seal for closed suction drainage
- Active drains: Jackson-Pratt
    - Negative pressure by creating a vacuum
    - Advantages: Achieves a continuous flow, not dependent on gravity, vacuum holds tissue layers together, decreased risk of ascending infection, decreases drainage time, can accurately measure volume

Dressings:

- Hypertonic saline (bactericidal, helps granulation tissue form) then hydrocolloid to help granulation tissue continue
- When moved into repair stage go to melonin + wound gel
- Primary bandage layer
    - Hydrophilic/non-hydrophilic
        - Hydrogel: paste, dressing, water-based material, if wound dry, keep wound moist, abrasions, mature granulation tissue
        - Hydrophilic synthetic foam
        - Hydrocolloid: beads, flakes, powders, pastes, dressing, starch polymers, absorb wound fluid > gel covering on wound, moderate to profuse exudate, granulation tissue promotion (calcium alginate)
        - Hypertonic saline: 20% saline, bactericidal, hydrophilic, early wound management, heavily contaminated or infected wound
    - Non-hydrophilic
        - Teflon-rayon dressings, nonadherent, semiocclusive, trap wound exudate
        - Petroleum-based dressings non adherent, semiocclusive, low moisture, permeable, enhance contraction and delay epithelialization
        - Become adherent as they dry, petroleum less so, for healed but fragile
        - Non-adherent non-hydrophobic = melolin
    - Occlusive
        - Waterproof – impermeable to fluid and air
        - Occlusive – impermeable to fluid, permeable to air
        - Semi-occlusive – permeable to fluid and air
    - Other
        - Honey: medical grade, antibacterial, enhances debridement, reduces oedema, inflammation, enhances granulation tissue/epithelialization

        - Sugar: hypertonic
- Secondary
    - Absorbent layer over primary
    - Pad bandage and help conform to body
    - Cast padding, cotton
    - Excessive padding – increases pressure
    - Cotton or antimicrobial impregnated (infected wound), don't do on floor, wear gloves
- Tertiary
    - Protective and conforming, may use more than one material, avoid waterproof materials (trap fluid at wound surface/macerate tissue), nonocclusive preferred

Post-op meds

- Antibiotic: dirty surgery so should do therapeutic pending culture (exit-culture)
    - Traumatic wounds: environmental contaminants, gram negatives and anaerobes
    - Was on amoxyclav (broad spectrum, predominantly gram +ve, excellent anaerobic coverage)
    - Now on marbofloxacin (more gram negative coverage than gram positive, weak against anaerobes)
    - Until 4-5d after clinical signs subsided

Why paralysis: paralyses body wall - easier to move around if need to access retroperitoneal space

Urinary catheter: prevent urination on site, monitor for urination if doing any excretory system sx

4 Layers of abdomen

- Peritoneum
- Internal rectus sheath
- Transverse abdominus
- External rectus sheath

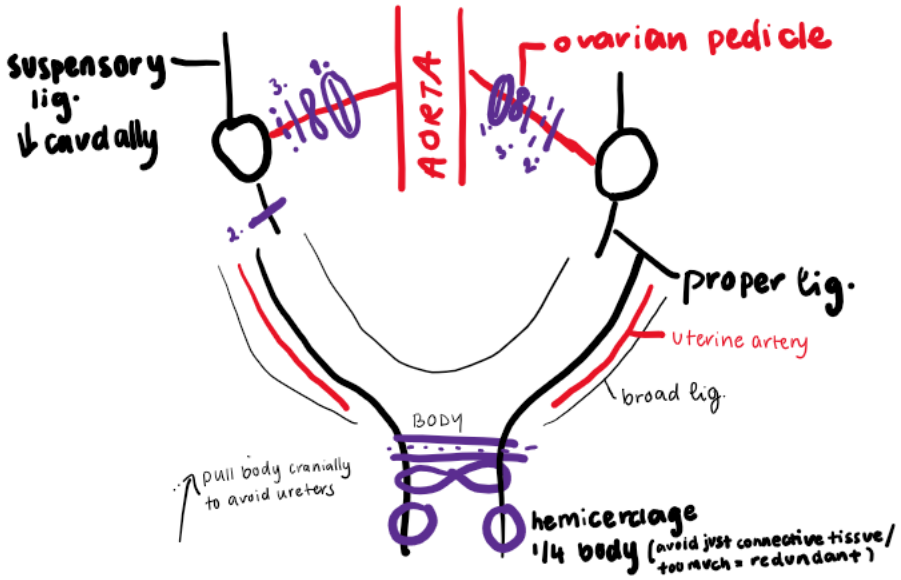
		Composition	*Capillarity*	*Tensile strength*	*Knot security*	*Suture reactivity*	*Handling*	*Other*
Absorbable	**Catgut**	Natural Sheep intestine	Multi	Poor 50% tensile by 7 days	Ok dry, poor wet	Strong	Good	Lasts 21 days Quicker absorption in acid
	Polyglactin 910 (vicryl)	Synthetic Glycolic and lactic acid	Multi	Good 50% lost in 14 days, 80% by 21 days	Poor	Tolerated Sometimes vascular reaction	Good Tissue drag though	Absorbed 70 dys Quicker absorption in alkaline & high temp
	Polydioxanone (PDS)	Synthetic polymer	Mono	Excellent 50% lost 28 days	Good	Little	Flexible, minimal drag, has memory	Mostly absorbed 91 days (complete 182)
	Poliglecaprone 25 (monocryl)	Synthetic polymer	Mono	50% loss by 10 days (bad)	Good	Minimal	Soft, flexible	Complete absorption 120 days
	Polyglytone 6211 (caprosyn)	Synthetic	Mono	50% lost by 5 days (worst)	Excellent		Soft, flexible	Complete absorption in 56 days
Non-absorbable	**Silk**	Natural	Multi	Fair 50% lost 1 y	Good	Some (good in vessel ligation)	Excellent Gold standard	

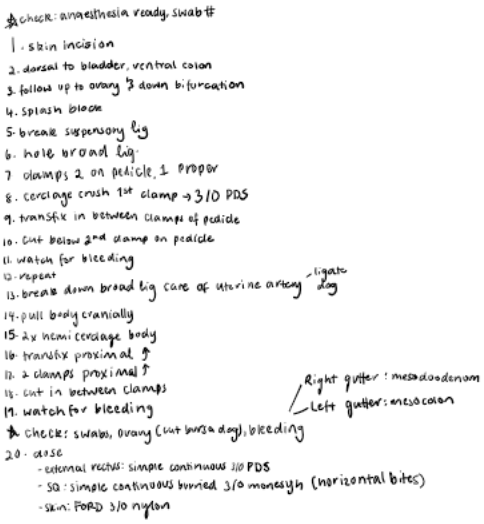
	Stainless steel	Synthetic	Mono or multi	Best	Best	Biologically inert	Poor	Will eventually break
	Nylon	Synthetic	Mono or multi	Good 30% lost after 2yrs	Poor	Biologically inert	Poor, memory	For skin sutures, drains Commonly used
	Polymerised Caprolactam	Synthetic	Multi	Good Loses when wet	Fair	Some	Good	Can't repeatedly sterilise (loses strength)
	Polyester fibres	Synthetic	Multi	High	Good uncoated	Significant	Tissue drag and poor without coating	
	Polypropylene	Synthetic	Mono	Poor	Fair	Biologically inert	Poor, memory	Least thrombogenic of any suture (used in vascular surgy)

Needles
Sharp, go through most
tough tissue, skin

cutting edge on outside, less traumatic, skin

delicate but tough e.g. small intestine, thick fascia





- **Castration**
  - Closed: elevate testes and incise over, pop them out, half hitch knot (transfix entire vaginal process), cut along clamp, slide clamp off haemostat
  - Open: elevate and incise, open parietal tunic (ID deferent duct and ligate, ID artery/vein ligate cut, ligate creamster), pull out, half hitch knot
  - SC closure monesyn, skin closure intradermal
- **Exploratory find:** liver (left medial, right medial, left lateral, right lateral, caudal), gall bladder. Right gutter move intestines out of way and use right mesoduodenum = kidney, adrenal vein draining into caudal vena cava, right adrenal gland, ureter, urachus, vas deferens caudal from prostate through inguinal ring. Left

gutter descending colon: kidney, adrenal (difficult), left limb of pancreas, ureter, vas deferens. Spleen, stomach (oesophageal junction, cardia, fundus, body, pyloric antrum, pylorus), small intestine (right limb of pancreas, epiloic foramen left limb and splenic vein) gall bladder > bile duct > duodenum (bile patency), portal vein and caudal vein deep, omentum and root of mesentery, large intestine (including the spiral colon), lymph nodes.

- Surgical classification
  - Clean: elective, GI, urinary tract, respiratory tract not entered, no drains, no break in aseptic technique
    - E.g. skin tumour resection, tail amputation, castration
  - Clean contaminated: GI, respiratory and urinary tracts entered in controlled way, no contamination to surrounding tissues, surgical drains or minor break in technique
    - Cystostomy, enterotomy, OVH
  - Contaminated: acute traumatic wound, acute inflammation, gross spillage from GIT, UG, respiratory tracts, major break in technique
    - Cystotomy with infected urine, OVH with pyometra, intestinal surgery with spillage, moderate risk for infection
  - Dirty: delayed surgery or contaminated wounds
    - Rupture of GIT, bladder, abscess, infected tissue, high risk

Ear and Oral

- Ear: ventral canal continuation of auricular cartilage, horizontal canal formed by annular cartilage. Caudal auricular branches of external carotid, maxillary artery, retroglenoid vein, innervation auriculopalpebral branch of facial nerve. Perioperative AB indicated especially chronic otitis externa.

Surgery	Indications	Diagnosis	Method	Complications/ prognosis
Aural haematoma	Collection of blood between cartilage of the ear and skin from trauma, chronic otitis externa, ear mites, FB	Clinical signs	Bovine teat tube: stab into #11 blade and haemostat to break down fibrinous adhesions, blood milked out, cavity flushed saline, tube into incisions, suture around collar 3/0 nylon, milk out for 21d. Incisional drainage and suture apposition large or chronic, incise on concave side, clean, 1mm skin removed, mattress sutures 3/0 nylon on convex side longitudinally, removed 10-14d	Don't bandage. Incision may result in ear deformity and pressure necrosis
Pinna lacerations	Pendulous ear dogs	Lots of blood	Skin-skin apposition, only one skin surface can heal secondary but primary better comesis, simple interrupted	
Pinna resection	Pinna neoplasia: SCC, mast cell, basal cell, sebaceous adenomas	Stage incisional biopsy		
Ventral bulla osteotomy - **Opening to access middle ear**	Inflammatory polyps from middle ear that protrudes into external ear, nasopharynx or Eustachian tube,	Pale white to pink masses. Chronic sneezing, gagging, discharge, stertorous breathing, otoscope	Incision lateral to the larynx and caudal to the angle of the jaw Digasticus m retracted laterally	Horner's syndrome Facial nerve paralysis

	cats, <2y, infection otopharynx can cause middle ear disease Non-responsive otitis media Neoplasia	exam, oral exam, CT, histopath Middle ear: head tilt, nystagmus, Horner's syndrome: miosis, enophthalmos, ptosis, protrusion of 3rd eyelid, Myringotomy and positive culture, CT Otitis externa: ear discharge, scratching, shaking, Otic exam, Nasopharynx GA	Ventral aspect of the bulla periosteum removed and bulla entered Cats have a septum: explore dorso-lateral and ventro-medial - Polyp curettage - Culture and sensitivity Perioperative Abs Postoperative AB, histological exam of tissue	Peripheral vestibular syndrome Recurrence Seroma/ wound complications PX: good to excellent
Surgical excision of salivary glands	Sialoliths Sialodenitis without rupture (P +Z) with rupture (M + S) Calculus Neoplasia (P dog, M cat) adenocarcinomas, cystadenocarcinoma, mucoepidermoid carcinoma, anaplastic carcinoma, basal cell carcinoma, fibrosarcoma, lipoma, mast cell tumor, lymphoma, osteosarcoma	Gland enlargement For neoplasia dx spread to local lymph nodes and distant sites, staging and CT	Sialodenectomy	Px mandibular better as easier to remove
Mandibular and sublingual sialoadenectomy	Sialoceles = accumulation of saliva within the tissue	Zygomatic = eye changes Mandibular = penetrating trauma Sublingual: cervical (most common), ranulas, pharyngeal Aspiration: saliva	May need to do both sides if unsure which one Lateral recumbency Incision over mandibular gland > capsule exposed and incised > gland grasped and dissected > blunt dissection extended cranially to sublingual > location of disruption > duct ligation and transection. Sublingual and mandibular together	Usually excellent outcome if take out the point of the problem – i.e. go rostral enough
Cleft palate	Primary (lip + premaxilla) Secondary (hard and soft palate) failure of fusion of nasomedial process with maxillary process Acquired due to dental disease, trauma,	Oral exam under GA + radiographic assessment of maxillary bone	First attempt is best Stabilize bony defects/ fractures first Enteral tube pre and post tension free closure and avoid suture line over bony defects, big flaps, stabilise fractures first Preserve blood supply Two layer closer	Failure of repair

	lymphocytic-plasmacytic stomatitis, oronasal fistulae		Dental lesion – remove tooth and do a buccal flap	
Oropharyngeal trauma surgery	Stick injuries	Significant bleeding (don't pull stick out) Respiratory distress (pneumothorax), pharyngeal/ laryngeal swelling, aspiration Evaluate under sedation oral exam, CT (gas pockets, stick fragments)	Stabilize haemorrhage (ligate carotid), analgesia pneumothorax chest tube Wound debridement and close deep wounds, leave oral wound open as contaminated, deep tissue culture neck, closed suction drain, oesophageal feeding tube, AB. Midline ventral cervical approach	Risky if no CT and therefore, deep injury not detected = migration, abscessation, gas pockets, and diskospondylitis
Oral Neoplasia SX	Non-neoplastic: Gingival hyperplasia, Eosinophilic granuloma complex, Osteomyelitis, Lymphocytic plasmacytic stomatitis, Nasopharyngeal polyps, Salivary mucoceles D: malignant melanoma, SCC, fibrosarcoma, osteosarcoma, periodontal ligament tumours + acanthomatous ameloblastoma (b) C: SCC, fibrosarcoma Tongue: SCC, MM, fibrosarc, plasmacytoma, haemangiosarcoma, rhabomyosarcoma Tonsils: SCC	Signs: pawing, difficulty chewing/swallowing, shifting food to one side of mouth, halitosis, drooling, blood tinged saliva or nasal discharge, facial swelling Oral exam GA X-ray CT Overall health scans Incisional biopsy: histopath Staging of LN	Excision Local control: SX +/- radiation Systemic: SX +/- chemo, autogenous vac (melanoma) Maxillectomy: no compartmental incision, maxillary, incisive or palatine bones, buccal or labial mucosal flap. Caudal = inferior orbit, zygomatic arch, vertical ramus. malignant, benign, fractures, osteomyelitis Mandibulectomy: partial or complete, labial mucosal flap, central and caudal Contaminated or dirty SX Peri-operative AB and analgesia 1cm gross margin Two layer closure not over bony defects Tongue resection: wedge, transverse glossectomy, partial amputation (not root) Postop: pain meds, fluids 24-72 hrs post, water and food 12-24hrs post	Facial swelling bad px Malignant melanoma rapid growth, bone invasion, early metastasis, poor px SCC: bone invasion, rostral low metastasis, caudal/tonsil high metastasis, lingual aggressive. C: maxilla/ sublingual grave, mandibular fair Fibrosarcoma: locally invasive, px variable. C highly invasive Osteosarcoma: locally invasive + metastasis, poor px Maxillectomy: mandibular canine tooth = ulceration Mandibulectomy: midline drift, instability, difficulty prehending food, ranula (resolves) Facial swelling, emphysema, dehiscence, drooling, tongue deviation, nose drooping