

10th ZÜRICH SURGICAL FACIAL ACCESS AND FLAP COURSE

11- 13 June 2015

SPONSORS: DePuySynthes, KLS Martin,
COVIDIEN and ANKLIN

COURSE FACULTY

Course Chairman:

Marius Bredell (Senior consultant Maxillofacial and Oral Surgery, Zürich)

International Faculty:

Massimo Maranzano (Senior consultant Maxillofacial and Oral Surgery, Plastic and reconstructive Surgeon, Manchester Royal Infirmary, United Kingdom)

Raquel Guijarro Martinez (Consultant, Dept Maxillofacial and Oral Surgery, Universitat Internacional Catalunya, Spain)

Local Faculty:

Magdalena Vich (Dept Anatomy, Zürich)

Thomas Gander (Consultant, Dept Maxillofacial and Oral Surgery, Zürich)

Daniel Zweifel (Consultant, Dept Maxillofacial and Oral Surgery, Zürich)

COURSE OBJECTIVES

Facial Access:

Understand the anatomical rationale for the demonstrated facial accesses
Performing the required procedures
Explore the surrounding anatomical hard and soft tissue structures
Gain self-confidence to select and perform various facial accesses

Flap Course:

Understand and get to know the relevant anatomy for each demonstrated flap
Develop an understanding regarding criteria for flap selection
Explore the surrounding anatomical structures
Perform the selected free flaps
Gain self confidence in flap raising and reconstruction

COURSE PROGRAM

11 JUNE 2015

13.00 - 13.30	Registration		
13.30 - 13.45	Introduction and Organisation		
13.45 - 14.45	<u>Lecture</u>	Orbital access Radial Forearm Free flap	Gander Bredell
14.45 - 16.15	<u>Training</u>	Orbital access <u>Radial Forearm Free flap</u>	
16.15 - 17.30	<u>Lecture</u>	Temporomandibular joint Rectus Abdominis Free flap	Gander Maranzano
19.00	DINNER	all participants, instructors and sponsors. (Linde Oberstrass, Universitätstrasse 91, 8006 Zürich	

12 JUNE 2015

08.15 -10.15	<u>Training</u>	Lavage, Arthroscopy Temporomandibular Joint exploration Leclerc and Girard procedure <u>Rectus Abdominis Free flap</u>	
10.15- 11.00	<u>Lecture</u>	Coronal approach Gillies elevation, Zygoma hook Anterolateral Thigh Free flap	Zweifel Bredell
11.00 - 13.00	<u>Training</u>	Gillies elevation, Zygoma hook, Positioning screw insertion. Coronal Approach to Zygoma and Nasal structures <u>Anterolateral Thigh Free flap</u>	
13.00-13.45		LUNCH	
13.45 - 14.30	<u>Lecture:</u>	Parotid and Facial nerve DCIA Free flap	Bredell Maranzano
14.30 -17.00	<u>Training</u>	Approach to the Parotid and Facial Nerve (left side only) <u>DCIA Free flap</u> <u>Additional procedures/flaps (SCAF)</u>	

DINNER

all on your own.....or with the group, explore Zürich

13 JUNE 2015

08.15-09.00	<u>Lecture</u>	Neck access and Supraomohyoid neck dissection Resection 2cm Mandible, placement of recon / locking plate Fibula Free flap	Zweifel Bredell
09.00 -11.30	<u>Training</u>	Neck access and Supraomohyoid Neck dissection resection 2cm segment mandible and placement of recon / locking plate <u>Fibula Free flap</u>	

11.30 -12.30	<u>Lecture</u>	Submental intubation Tracheotomy, Cricothyroidotomy Condylar plating from extraoral Trans-buccal and trans cutaneous approach Pectoralis Myocutaneous flap Osteoperiosteal Femur flap (time permitting)	Guijarro Maranzano
12.30 -13.00	LUNCH		
13.00 -14.30	<u>Training</u>	Tracheotomy, Cricothyroidotomy Plating of Condyle Trans-buccal and extra oral approach <u>Pectoralis Major Flap</u> <u>Osteoperiosteal femur Flap</u>	
14.30 -15.15	<u>Lecture:</u>	Temporalis flap; Local skin flaps Latisimus dorsi /Scapula Free flap	Bredell Maranzano
15.15 -17.30	<u>Training</u>	Temporalis flap Local Skin Flaps <u>Latissimus Dorsi Free flap</u>	

APERRO/COCKTAIL

Potential additional procedures: When time allows additional procedures may be performed, please consult with the instructors.

DETAILED PROGRAM

11 JUNE 2015

13.45-14.45

Lecture: Orbital Access (Fronto-Zygomatic, Transconjunctival, Transcaruncular) as well as Radial Forearm Free flap

14.45-16.15

Orbital access

AIM: Master various access methods to the orbit with detailed attention to the incision position, soft tissue layers, safe bone exposure, lateral and medial frontozygomatic region as well as the bony anatomy of the orbital floor (infraorbital fissure, lacrimal apparatus and other bony landmarks as well as the shape of the floor and relative distances to anatomical landmarks)

PROCEDURE:

- Frontozygomatic (Brow and Upper Bleph)
- Infraorbital (Marking Only)
- Subciliary (Dissection)
- Transconjunctival with Lateral Canthotomy (Dissection)
- Lynch (Semi lunar on one side and W on the other) incision as well as a Transcaruncular incision for access to the medial orbital wall.

Dissection:

- Dissect Inf Rectus and Inf Oblique Muscles and visualise medial attachment of the latter
- Measure and record all distances to important intraorbital structures from the infraorbital rim. (IOF, SOF, OF, Ant and Post Ethmoidal Artery)
- Dissect Medial and Lateral Canthal ligaments.
- Close all incisions with meticulous repositioning of canthal position. Practice the correct closure technique regarding prevention of eye irritation.

Radial Forearm Flap

AIM: Appropriately design and dissect a Radial Forearm flap with recognition and preservation of all the important functional structures and to get to know the surrounding anatomy.

PROCEDURE:

- Skin marking of flap as well as underlying structures (Arteries, Veins, Nerves as well as Muscles).
- Skin Incision on Ulnar side, through to the fascia overlying the M. flexor carpi radialis or the M. palmaris longus, proceed with dissection towards radial side staying on a subfascial plane up to the inter-muscular septum that has to be sharply transected to reach the vascular bundle.
- Make the Caudal and Radial incisions. The radial incision should be lateral to the V. cephalica. Beneath the caudal incision, identify the branches of the N. radialis as well as the artery and vein. Tie off the A. and V. radialis. (Dissection through the intermuscular septum may be difficult)
- The Radial dissection is also on a subfascial plane, only interrupting it to preserve the radial nerve. Dissect deep to the V. cephalica and follow it through proximally.

- Incise the proximal part of the skin paddle to the subcutaneous fat, preserving all superficial veins as well as the N. antebrachialis.
- Continue the dissection on the radial side by keeping below the fascia and retracting the M. brachioradialis laterally to avoid encroachment of the vascular pedicle.
- Open the incision to the Cubital fossa, dissect the superficial veins, including the V. cephalica and keep the superficial and deep systems connected.
- Elevation of the flap as well as the vascular pedicle from caudal to cranial. Take care of the vascular pedicle, clipping the muscle perforators it with observation of the proximal venous anatomy (both superficial and deep systems). Also take care to retract the M. brachioradialis laterally, away from the M. flexor carpi radialis to expose the vascular pedicle and retain the contact between Flap and Pedicle. Cauterise/tie off the deep perforators to the vascular pedicle.
- Elevate the flap proximally and identify and tie of the common venous trunk in the Cubital Fossa. The N. antebrachialis has to be transacted here and can be used for a sensate flap. N. antebrachialis typically runs between the superficial and deep venous system
- Tie off A. radialis and common venous trunk (cuboid vein)
- OBSERVE: N. medianus, Proximity of the Radius (potential donor site) to the vascular pedicle, Relationship of A. and V. ulnaris
- Skin closure

16.15-17.30

Lecture: Temporomandibular joint Lavage, Arthroscopy, Access and Le Clerq as well as Rectus Abdominis flap.

19.00 **Course Dinner**

12 June 2015

08.15-10.15

Temporomandibular Joint exploration and Le Clerc procedure.

AIM: To recognise the relevant superficial and deep anatomical hard and soft tissue structures as well as the position and function of the capsule and disc. To safely be able to perform an lavage, arthroscopy and open joint access.

PROCEDURE:

- Palpate TMJ and Zygomatic arch.
- Lavage technique: Skin markings 1cm/2mm and 2cm/1cm on line from tragus to lateral canthal ligament of eye. Step technique from Zygomatic arch to the superior joint space, Palpate the roof of the glenoid fossa with canule, Inflate joint space and observe chin movement, Position second canule more anteriorly, and confirm communication between the two cannulas.
- Insert TMJ Arthroscope as per demonstration in the more posterior marking. (1cm/2mm) Second access point for rinsing (2cm/6-8mm)

- Pre auricular incision (ca 3cm only), temporal area dissection to the superficial temporal fascia (strong white plane), Pre auricular cartilage dissection to the Zygomatic arch (on the bone). Join these incisions along the temporal fascia plane.
- 45 Degree incision to the superficial part of the temporalis fascia. Reflect anteriorly exposing arch and TMJ capsule
- Complete exposure to the capsule with identification of N Auriculotemporalis, A. and V. temporalis.
- Observe the functional and relevant anatomy (Look at the proximity of the EAM and deep structures)
- Open the upper and then lower disc space with identification of the disc position
- Perform a posterior disc plication (first screw and then wedge) and then discectomy as well as an Obturation with L Plate (2mm System), Le Clerq procedure and Eminectomy.
- Explore the functional and relevant anatomy (Look at the proximity of the EAM and deep structures)
- Skin closure

Rectus Abdominis Free Flap

AIM: To be able to perform a rectus abdominis free flap and to understand the vascular and muscular anatomy of the flap as well as the surrounding structures

PROCEDURE:

- Skin marking of relevant anatomical positions as well as underlying structures. (DIEA Inf and sup DSEA epigastric A. and V. Systems, A. femoralis, anterior superior iliac spine, costal margin, Linea alba from Pubis to Xiphisternum, Linea semilunaris (App midpoint Pubis-ASIS), Arcuate line (ca level of ASIS)- anterior rectus sheath should not be harvested not lower than this.
- Skin paddle marking transversing the perforator rich peri-umbilical tissues.
- Skin Incision Cephalad and Caudal as well as identification of M. rectus abdominis deep to rectus sheath exposing it from linea semilunaris (lateral) to linea alba (central),
- Elevate from external oblique and aponeurosis of the linea semilunaris. (Lateral to medial) and identify first set of musculocutaneous perforators, making an incision through the anterior rectus sheath in this area.
- Dissect from medial and above the ant rectus sheath, cuff of ant rectus sheath is maintained by incising trough the sheath at level of linea alba. Skin paddle now completely isolated from the muscle except for the midportion and only this portion of the rectus sheath needs to be harvested.
- Expose caudal aspect of the rectus sheath and incise along the suspected vasc pedicle, exposing the rectus abdominis muscle.
- Elevate the rectus abdominis off the post rectus sheath from cephalad to caudal. Blunt dissection along linea semilunaris exposes the segmental nerve supply and caudally the DIEA and V is identified.
- Elevation of the flap as well as the vascular pedicle with observation of the proximal venous and arterial anatomy.
- Closure of rectus, specially the portion below the arcuate line. (be careful not to penetrate peritoneal cavity)
- Skin closure

10.15-11.00

Lecture: Gillies Elevation, Zygoma hook and Positioning screw placement as well as Coronal approach, Zygoma osteotomy with plate fixation as well as the Anterolateral thigh Flap

11.00-13.00

Coronal Approach to Zygoma and Nasal structures, Zygoma repositioning.

AIM: To become familiar with the relevant anatomical hard and soft tissue structures and to be able to gain access to the facial skeleton via a coronal approach. Explore the Frontozygomatic suture area.

PROCEDURE:

- Gillies elevation (Intra- and Extraoral)
- Hook and Positioning screw placement
- Skin marking for coronal incision (wavy or angular)
- Skin incision with identification of appropriate skin layers.
- Special attention to the level of the temporal fascia.
- Reflection of flap in a supraperiosteal manner right
- Generation of a galea- fascia flap on the left
- Identification of the relevant anatomical structures and exposure of the zygoma as well as the orbital and nasal structures
- Identify the infra-orbital fissure from superior
- Zygoma osteotomy with plate fixation
- Remove hardware and close

ANTEROLATERAL THIGH FLAP:

AIM: To understand the difference between a perforator and a conventional free flap and to safely dissect such a flap. An understanding of the flap relevant and surrounding anatomical structures up to the lateral circumflex artery.

PROCEDURE:

- Skin marking of relevant anatomical positions as well as underlying structures.
- Draw a line, ASIS to Lat Patella, marking the midpoint of this line and 2cm lateral to the midpoint. Draw a safety circle area of ca 3cm around this point.
- Mark skin paddle ca 11cm long (cephalad to caudal), 7-8cm wide.
- Lateral skin incision first with an extension to the ASIS, through fascia, reflect medially, identify musculocutaneous or septocutaneous perforator (identify at least one) (60% musculocutaneous, 40 % septocutaneous)
- Follow perforator deep and in a cranial direction, tie off inferior extension, and preserve the motor nerve to the vastus lateralis if possible.
- Retract the vastus lateralis and rectus femoris from each other to follow the perforator to the descending branch of the lateral circumflex femoral artery and vein.
- Follow the deep circumflex artery/vein to the deep femoral vessels (not done in practice, but gives one a good idea regarding the regional anatomy)
- Then perform the medial incision through the fascia and reflect laterally, taking care to preserve the one or more perforators.
- Identify the lateral circumflex femoral artery which is a branch of the common femoral artery.
- Skin closure

- ALTERNATIVE: Medial approach on the other side

13.00-13.45 LUNCH

13.45-14.30

Lecture: Parotid and Facial Nerve and DCIA Free Flap.

14.30-17.30

Approach to the Parotid and Facial Nerve (LEFT SIDE ONLY)

AIM: To appropriately place incisions in the aesthetic zone, Identify the SMAS layer, Expose the parotid gland as well as the facial nerve and identify its relationship to surrounding structures. Safely perform a lateral parotidectomy.

PROCEDURE:

- Skin marking
- Auriculotemporal nerve as well as A and V. Temporalis (superficial) identification
- SMAS (superficial musculoaponeurotic system)(that may be interpreted as the flattened apponeurosis of the Platysma muscle) this is the system generating attachment between the skin and mimic musculature
- Slightly deeper the enveloping parotid fascia is found. Dissect anteriorly on this plane to the end of the parotid, taking care not to injure the distal facial nerve branches emerging from the anterior parotid at the junction with the masseter muscle. Try to identify at least one branch
- N. facialis stem identification according to landmarks (Use cartilaginous pointer, M. digastricus, Tympanomastoid suture etc)
- The distance of the facial nerve trunk from each of the surrounding landmarks ranges from (mm): tragal pointer, 24.3 to 49.2 (mean 34); posterior belly of digastric, 9.7 to 24.3 (mean 14.6); external auditory canal, 7.3 to 21.9 (mean 13.4); tympanomastoid suture, 4.9 to 18.6 (mean 10.0); styloid process, 4.3 to 18.6 (mean 9.8); transverse process of the axis, 9.7 to 36.8 (mean 16.9); angle of the mandible, 25.3 to 48.69 (mean 38.1).
- Proceed by performing a Superficial Parotidectomy by using a curved mosquito.
- Careful observation of the relative anatomy of the Facial Nerve
- Appreciate the relative anatomy for the retro mandibular approach to the condyle
- In appropriate cases the deep lobe of the parotid can also be removed
- Skin closure

DCIA Flap (osteo-musculo-cutaneous)

AIM: To become familiar with the relevant surgical anatomy of the Crista Iliaca as well as its blood and neural supply. To be able to raise an osseo-musculocutaneous DCIA flap with special attention to the prevention of post-operative hernia.

PROCEDURE:

- Mark relevant anatomical landmarks, bony, muscular, arteries and nerve

(ASIS, femoral artery, DCIA, fusiform skin paddle on the line extending from the ASIS to inf border of scapula) The major musculocutaneous perforators lie in the area 2 cm medial and cephalad to ASIS and extend to ca 9 cm posterolateral from ASIS)

- Skin incision, on cephalad portion of skin paddle to external oblique as well as aponeurosis.
- Identify musculocutaneous perforators between subcutaneous tissue and the external oblique muscle. Skin may be elevated off the ext obl muscle to ca 2.5 cm from iliac crest where musculocutaneous perforators can be seen. Incise the M. external oblique here (through muscle and fascia along the full extent of the wound and maintaining this muscle cuff).
- Elevate external oblique and identify the whole internal oblique and palpate 12th rib.
- Incise the internal oblique muscle on its medial margin, separating it from the M. transversus abdominis. (by observing for change in muscle fibre direction)
- Dissect between M internal oblique and M. transvers abdominis laterally and identify the ascending branch of the DCIA (nutrient vessel of IO).
- Identify ascending branch of DCIA and follow it inferior and medially to where it penetrates the M. transvers abdominis to join the DCIA.
- Junction of ascending branch with DCIA is mostly medial to ASIS, DCIA and DCIV then traced to junction with external Iliaca art and vein.
- Lateral portion of the M. transversus abdominis is transected, leaving a 2 cm cuff on the medial side of the crest. This allows access to the M. iliacus and the lateral cutaneous nerve.
- At this point extra-peritoneal fat may bother the dissection
- DCIA and V runs in the fibrous junction between the M. iliacus and the transverses abdominis.
- Transect M. iliacus to expose inner table of Ilium.(keep 2 cm cuff of M. iliacus)
- Lateral dissection by incision on inf border of skin paddle to level of tensor fasciae late and tendon of M. gluteus medius up to the lateral part of the iliac crest.
- Sharp lat dissection and bony osteotomies.
- Mobilise and reflect flap inferiorly and evaluate whether the lat cutaneous nerve runs superficial or deep to the DCIA and V

ALTERNATIVE WHEN FLAP WITH MINIMAL SOFT TISSUE IS TO BE RAISED

- Start with the skin incision running from the pubic crest, parallel to the inguinal ligament to the ASIS
- Dissect medial and parallel to the inguinal ligament to identify the DCIA and V lying deep to the fibrous sheath extending from the abdominal musculature
- Identify the connection to the external iliac artery and vein
- Identify the ascending as well as DCIA
- Close skin.

ADDITIONAL FLAP PROCEDURES

SCAF FLAP

19.00 DINNER all on your own.....or with the group

13 JUNE 2015

08.15-09.00

Lecture: Neck access and Supraomohyoid Neck dissection, pre bend recon plate, resection of 4cm Mandible and placement of pre bent load bearing plate , fixation of Fibula flap as well as Fibula free flap. (Facial access and Flap teams have to work together here)

09.00 – 11.30

Neck access and Supraomohyoid Neck dissection (LEFT SIDE)

AIM: To be able to rapidly gain access to the neck vasculature and to be able to perform a supraomohyoid neck dissection. (Functional neck dissection levels I-III) Relevant anatomy knowledge of the deeper and superficial structures should be gained. Identify at least N. phrenicus and Bracial Plexus as deep neural structures.

PROCEDURE:

- Mark all relevant structures with ink
 - jugular indentation, clavicles, acromion, mastoid, midline, lower border of mandible and ascending arch

- Mark incision/s
 - if unilateral: extend from midline roughly 2cm below chin in arched manner at least 3 fingers below mandible, choose skin crease and follow through up to mastoid
 - if bilateral: see unilateral with identical cut bilaterally
 - or: neckline-incision from mastoid to mastoid along skin crease, ant. Height at midline should be just above cricoids (can be higher)
 - additionally extend incision from nadir of arch to middle of clavicle in wavy line if necessary (T-incision)
 - mark relationship of incision-level cutis on either side of inked line, 3-4 pairs of sutures

- incision and raising skin-flap and platysma
 - incise skin with scalpel or HotKnife[®] at 110°C or similar up to subcutaneous tissue in entire length of marked incision line, isolate platysma using blunt dissection and incise platysma only, tissues will separate to fatty layer. Incise entire level of platysma muscle.
 - lift segment of platysma with double Gillies hooks at nadir of incision and dissect just deep to it (HotKnife[®] 190°C), keeping the elevated part of the flap under tension and paying attention not to leave any platysma muscle behind (can be a hindrance in finding marginal mandibular branch of facial nerve later on). Continue cranially until lower border of mandible palpable. During this segment always take care not to create pockets, but to separate platysma from superficial layer of deep cervical fascia (from now on fascia) in a straight line. Hold elevated flap with double Gillies hooks, at appropriate time switch to 2-3 holding sutures fixed to hemostats.
CAVE: do not injure V. jugularis ext. or greater auricular nerve, which are the first structures you will encounter on the sternocleidomastoid muscle (SCM).

- identify the entire anterior border of the SCM with preservation of EJV and greater auricular nerve

- isolate marginal mandibular branch of facial nerve and elevate
 - beginning caudally with nerve stimulator at 5/10 mVolt stimulate neck tissue and observe reaction of chin and angle of mouth (always keep these structures in view). Mark level just below (ca.5mm) first reaction
 - ca. 1cm ant. to extension of ascending ramus and at level of maximum stimulator response spread fascia using scissors or hemostat and isolate nerve in depth, usually more than one branch!
 - using nerve stimulator isolate entire nerve and elevate within its fascia until mandible is palpable, take care to stay just above submandibular gland and do not include too much tissue in elevated flap, always palpate it for additional lymph nodes and resect if appropriate
 - in this process you will encounter the facial vein, tie off facial vein and elevate cranially to protect the marginal mandibular nerve
 - isolate A. and V. facialis and clip both at level of mandible. Clean bone (supraperiosteally) from tiss is just cranial to facial vein!
 - keep marginal mandibular nerve protected by using blunt retractors

- incise fascia along vertical midline of SCM extending cranially to the mastoid and caudally to below incision level, taking care to separate platysma from fascia along caudal aspect of incision. Elevate fascia along muscular border of SCM to ant. border, ensure good hemostasis of perforator vessels and take care to spare greater auricular nerve and external jugular vein. Clip external jugular vein as proximal as possible if necessary and deflect caudally.

- Prep SCM from fascia up to ½ of width on its deep aspect. CAVE: cranially look for accessory nerve, the anatomical position of which is variable but in most cases will perforate the SCM at some point (on level of angle of mandible), after isolating it with nerve stimulator. Continue deep preparation to the VJI, mark a line parallel and posterior to (from level of omohyoid muscle to NXI) Dissect deeper on this line to the level of the cervical cutaneous branches and then anteriorly on this level to reach the posterior aspect of the VJI or even the ACI. You may dissect as deep as the N. Phrenicus.

- transect liberated fascia to sheath of neck vessels by lifting the liberated tissue firstly anteriorly, isolate internal jugular vein, external carotid artery, vagal and phrenic nerves and spare all structures cranially and anteriorly, now dissect anteriorly on the level of the branches of the VJI. Also spare N.ansa cervicalis superficialis. The anterior and inferior margin of preparation is the omohyoid muscle.

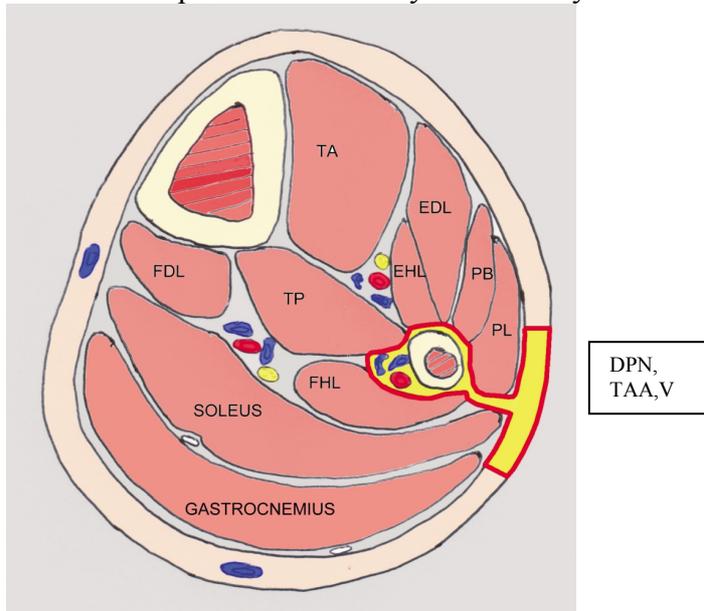
- Level IIb cranial to NXI can now be dissected. Dissect to trapezius muscle as posterior plane and anteriorly to posterior belly of digastric muscle (resident's friend!). Pull resection through below the NXI. CAVE: Keep VJI in mind here.....

- at median border of mandible incise in midline identify the opposite sided anterior belly of the digastric muscle, the inferior border of the mandible and left and right belly of the digastrics muscle should be visible (Level Ia), dissect down to geniohyoid muscle from cranially prep caudally towards hyoid and deflect tissue caudally, look for the artery and vein supplying the mylohyoid, it may bleed profusely. Look for posterior margin of mylohyoid muscle, insert retractor and place under tension.

- pull liberated tissue in order to expose the floor of the mouth and gain access to this area, isolate lingual nerve and sublingual ganglion; coagulate tissue between ganglion and lingual nerve and transect. Isolate submandibular duct (Wharton's duct) and clip as distally as possible (as close to papilla as possible). Spare hypoglossal nerve, which lies medial and inferior to the posterior belly of the digastrics muscle.
- deflect entire block of tissue caudally and prep from muscle up to hyoid, digastric muscle tents as the deep border of resection. During the resection of the entire block look for the deep part of the facial artery once more and clip a second time.
- place resected tissue on block and orientate for pathology
- mark a 4cm resection, place 2.4 reconstruction plate (at least 3 screws either side) with marking of resection on plate
- check for complete hemostasis
- place 2 drains; one medially and one laterally in the region of the mastoid
- sutures to approximate platysma, both single sutures or continuous suturing is acceptable
- subcutaneous sutures (take care to approximate according to previously placed skin markings), then intracutaneous or cutaneous running suture

Fibula Free flap

AIM: To understand the indication and be able to safely perform a Fibula free flap based on anatomical knowledge as well as to be able to perform an osteotomy on the Fibula. Get to know the deep relevant anatomy and identify the sural nerve.



PROCEDURE:

- Skin marking of relevant anatomical positions and landmarks to intermuscular septum. (lateral pole of Fibula as well as lateral malleolus and a straight line connecting these two points, divide this line in thirds, common peroneal nerve running ca 2cm inferior to lat pole of fibula)
- Cutaneous flap marked ca 0.5-1cm below the indicated line centered on the intermuscular septum.(Between m. peroneus longus and m. soleus)
- Skin incision on upper part of skin paddle end extending this superiorly and inferiorly on the intermuscular septum line and incise the fascia, reaching the muscle to simplify the identification.
- Identify the intermuscular septum between the M. peroneus longus and M. soleus.
- Dissect on the skin paddle from superior to inferior and identify the one or more perforators. (mostly septocutaneous)
- Dissect along the whole anterior length of the Fibula to reflect the M. peroneus longus, M. peroneus brevis and M. extensor hallucis longus. (Be cautious of the deep peroneal nerve, ant tib artery and vein.)
- The deep peroneal nerve and A. and V. tibialis anterior must be identified, protected and retracted medially. The anterior intermuscular septum needs to be transected in this process reaching the strong interosseous membrane.
- Resect 1cm Fibula segment inferiorly ca 7cm above the lat malleolus and likewise 7cm below the lat pole of the fibula superiorly (can be performed before or after transection of the interosseous membrane)
- Retract the fibula segment laterally after incising the interosseous membrane (chevron like M. tibialis posterior now visible) and identify the caudal peroneal artery and vein and tie off.
- Approach now again from anteriorly, retract the Fibula with bone hooks lateral and inferior, stretching the M. tibialis posterior that has a chevron appearance with fibres running from medial to lateral.
- Transect the M Tibialis posterior to reach and follow the peroneal A. and V. cranially to their junction with the A. and V. tibialis posterior.
- Perform the posterior incision on the skin paddle and identify the perforators to the skin paddle. Dissect posteriorly in the M. soleus to have a thin muscle cuff around the perforators. The space between the M. soleus and M. flexor hallucis longus can easily be performed by blunt finger dissection
- The last muscle to be transected is the M. flexor hallucis longus
- Tie off the peroneal artery and vein.
- Perform a 45° Fibula osteotomy with 2.4 locking plate (as prepared from the resection team)
- Build in the fibula in the mandibular defect, maximising the pedicle length
- Skin closure

NOTES:

11.30-12.30

Lecture: Submental Intubation, Cricothyroidotomy, Tracheotomy and Condylar plating via intraoral route, Submandibular, Transparotid, Retromandibular access as well as Pectoralis Myocutaneous flap.

Lunch 12.30-13.00

13.00-14.45

Cricothyroidotomy, Tracheotomy and Plating of Condyle (right or left) through intraoral route, Submandibular, Transparotid, Retromandibular access. (RIGHT SIDE)

AIM: to be able to perform a cricothyroidotomy and tracheotomy in a safe but time effective manner and understand the surrounding anatomy. Place a condylar plate through intraoral route. Submandibular, Transparotid and Submandibular access indication, anatomy and perform the surgery.

PROCEDURE: (Crico/Tracheotomy)

- Marking of surface landmarks (cricoid, thyroid, M. sternocleidomastoid, sternal notch)
- Perform cricothyroidotomy with stab incision and insertion of a needle or small tube.
- Perform tracheotomy. Skin incision (horizontal) with deeper dissection.
- Identification of all the relevant anatomical landmarks up to the cartilaginous tracheal rings.
- Identify the third ring below the cricoid cartilage.
- Make an inferiorly based U shaped cartilage flap (Björk) with a suture through the cranial component aiding caudal reflection of the flap.

Condylar access and plating:

- Skin marking for access
- Place plate via intraoral route (endoscopically assisted) or via a combined intra and extra-oral route.

Pectoralis Major Flap

AIM: To understand the relevant anatomy of this previous workhorse (but now rescue flap) as well as to safely dissect and position the flap for optimal use for both intra oral and extra oral applications. Explore the reach of this flap and note the advantages and shortcomings of this flap.

PROCEDURE:

- Skin marking of Flap as well as underlying structures (Acromion, Xifisternum and draw a line from the one to the other. Mark approximate position of the

- thoracoacromial artery at the junction between lateral and medial third of the clavicle, indicate the perforating vessels to a deltopectoral flap in the parasternal region
- Design skin paddle and arc of rotation. (best is just lateral to the sternum with the biggest portion of the flap on the M. pectoralis major)
 - Extension of the skin incision to enable future or simultaneous deltopectoral flap.
 - Skin Incision all around the skin paddle to muscle and attach skin to muscle with sutures.
 - Expose the largest part of the M. pectoralis major muscle, especially the lateral portion as this will enable easier separation of the pectoralis major and minor muscles.
 - Transect the rectus superior muscles or the pectoralis major muscle reaching the intercostal musculature and ribs both inferiorly and then medially where only the pectoralis muscle is to be found.
 - Dissect cranially and lateral, cauterising the perforators, taking care not to cause a haemothorax and proceed to the level between the M. pectoralis minor and major muscles (clearer on the lateral approach). On this plane dissection becomes easier and the thoracoacromial and lateral thoracic arteries can be palpated.
 - Mark the vascular pedicle on the M. pectoralis surface and transect first the medial and then the lateral part of the M. pectoralis major muscle from its attachment to the humerus. Keep a healthy part of muscle as cuff around the vascular pedicle.
 - For a better arch of rotation the lateral thoracic arterial pedicle as well as one or more of the pectoral nerves may be transacted.
 - Elevation of the flap as well as the vascular pedicle with observation of the proximal venous and arterial anatomy.
 - Rotation of flap without twisting.
 - Replace and skin closure.

14.45-15.30

Lecture: Temporalis Flap, local skin Flaps as well as Latissimus dorsi Free Flap.

15.30-17.30

Temporalis Flap as well as Local Skin Flaps (Cadaver rotated to side)

AIM: To understand the relevant anatomy of the M. temporalis and to safely perform a Temporalis muscle flap with and without a coronoidectomy. To note the advantages of a zygoma arch osteotomy and see the reach of this flap. To apply the basic principles of local skin flaps.

PROCEDURE: (Temporalis)

- Temporalis muscle dissection
- Elevation of the muscle flap
- Intra-oral incision medial to the parotid duct ca 4cm and extending posteriorly.
- Dissect tissues free posterior from the malar process as well as up to the lateral orbital area. Create a tunnel here of at least 2cm diameter.
- Zygoma osteotomy to improve possibility to deliver the M. temporalis intraorally without undue trauma.

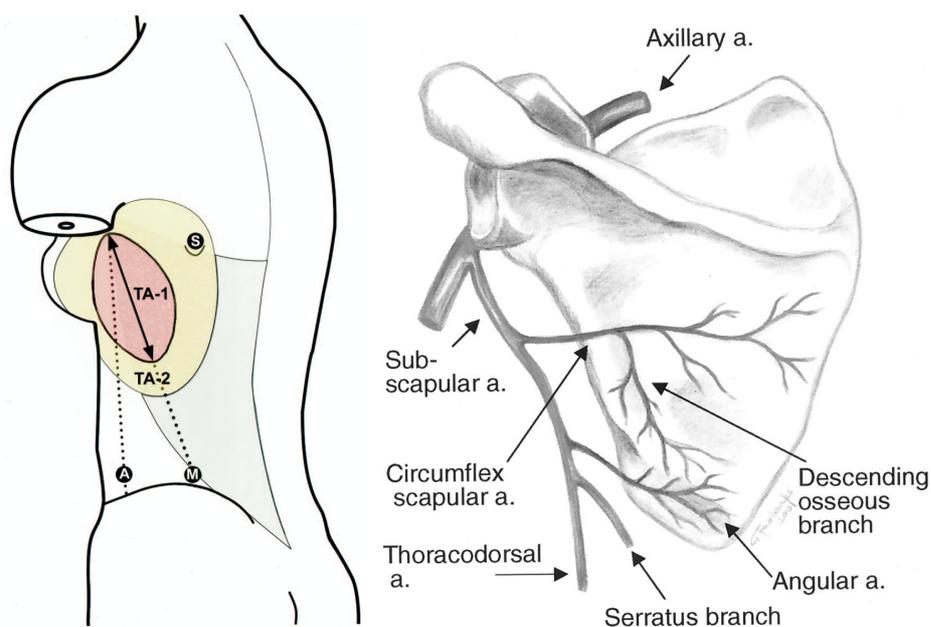
- Coronoideotomy can be performed to improve reach up to the lower canine region. (do this before the muscle is transferred intraorally)
- Delivery of the muscle intraorally and check the extent of coverage. (One should be able to reach the canine or first premolar region.

(Local skin flaps)

- Z Plasty and elongating a straight line
- Modified Webster for repair of lower lip defect
- Rhomboid flap for cheek defect
- Lateral alar defect repaired with a laterally based rotation flap or full thickness auricular graft
- Forehead rotation flap

Latissimus Dorsi Free flap Dissection (Cadaver rotated to side)

AIM: To safely and successfully perform a Latissimus Dorsi Flap



PROCEDURE:

- Mark midpoint of axilla and the iliac crest (midpoint between ASIS and PSIS) and the tip of the scapula. Draw a line between the axilla midpoint and the iliac crest which indicates the anterior border of the latissimus dorsi.
- Ca 8-10cm below the axilla midpoint the thoracodorsal A. and V. enter the M. latissimus dorsi and divide into a horizontal branch and a anterior branch running ca 3-4 cm deeper than the anterior border of the M. latissimus dorsi.

- Orientate the skin paddle on the horizontal branch in a fusiform shape along the anterior border of the latissimus dorsi.
- Start with the anterior incision of the skin paddle and extend the incision along the anterior border of the latissimus dorsi dissect deeper and identify the anterior border.
- Identify the thoracodorsal art in the fatty tissue of the axilla. More distal from this point the artery gives a branch to the scapula before entering the muscle. Most often the first structures seen are the branches to the serratus anterior muscle (fibres run more from anterior to posterior) that can be followed to find the thoracodorsal art.
- Transection of the branch to the serratus anterior allows further mobilisation of the thoracodorsal art.
- Complete the incision around the skin paddle up to the M. latissimus dorsi.
- One can now decide to either harvest only a portion of the muscle or practically the whole muscle.
- Further proximal dissection leads to the subscapular artery that gives off the circumflex scapular art. On this vessel a part of the scapula can be harvested as well, alternatively on the angular artery
- Skin paddles on the lower third of the muscle is less reliable as it is less dependent on the thoracodorsal art.

ADDITIONAL PROCEDURES:

- Deltopectoral Flap
- N. suralis dissection
- Saphenous vein dissection
- SCAF Flap

- FAMM Flap
- Lateral Tongue Flap
- Buccal Fat Pad Dissection.
- Rhomboid Flap
- Rotation Flaps
- Palatal Island Flap
- Sublingual gland island flap

APERO/COCKTAIL COURSE END