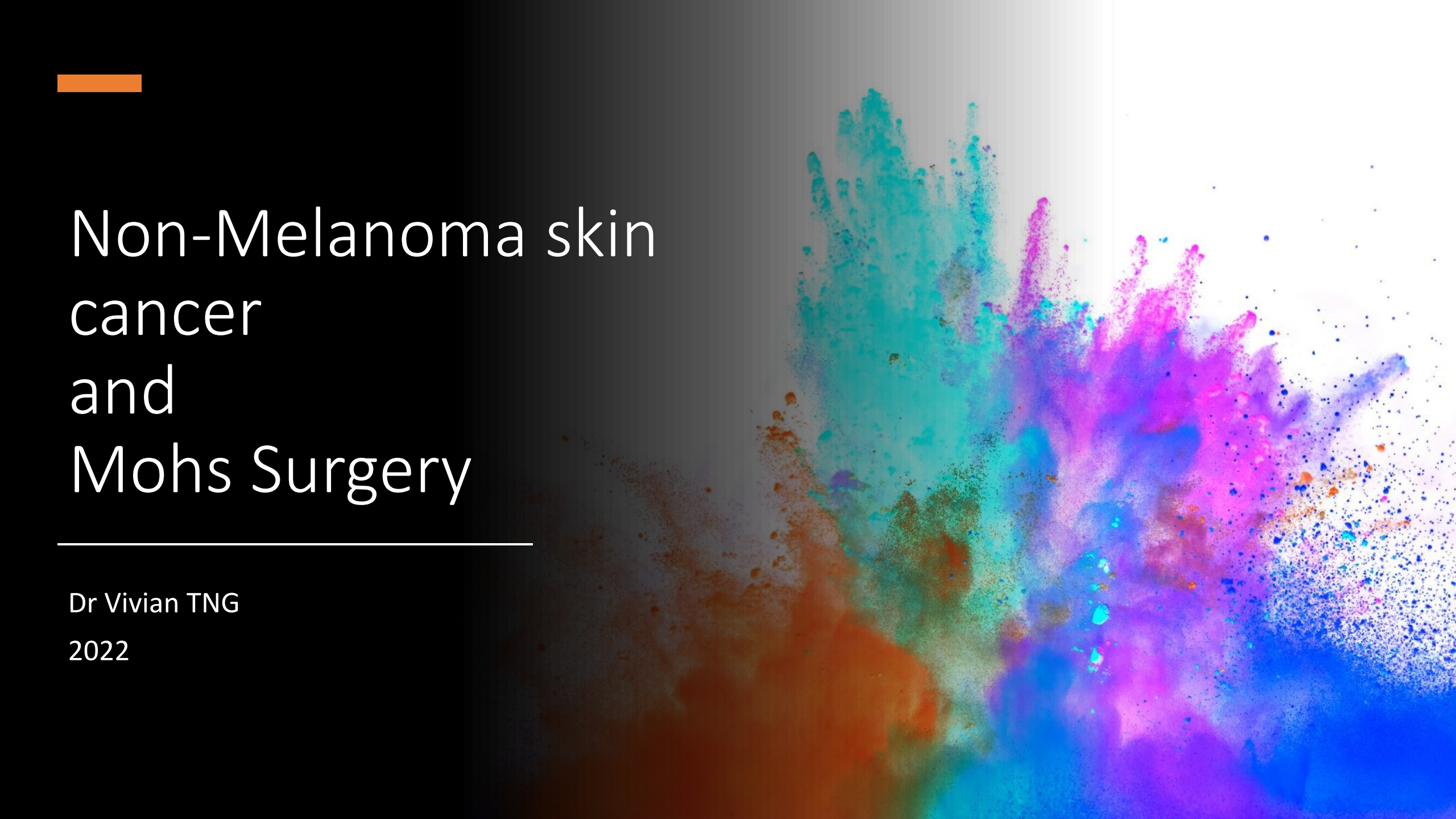
Non-Melanoma skin cancer and Mohs Surgery

Dr Vivian TNG

2022



Acknowledgment

- I would like to acknowledge that we are meeting on the traditional country of the Awabakal people.
- I would like to pay our respect to the elders past, present and emerging, including those in attendance today.

Topics

- Non melanoma skin cancers : BCC and SCC
  - also include rare cancers eg Merkel cell Ca, DFSP, AFX, MAC, sebaceous carcinoma
- High risk lesions/patients
- Hedgehog inhibitors
- Mohs surgery

TYPES OF CANCER

Non-melanoma skin cancer

SCIENTIFIC NAME
KERATINOCYTE CANCER

DOWNLOAD THE FACTSHEET

Find out more

Can you spot a rip at the beach a great wave a skin cancer?

Work outdoors? Use UV protection every day

JUMP TO:

ABOUT NON-MELANOMA SKIN CANCER

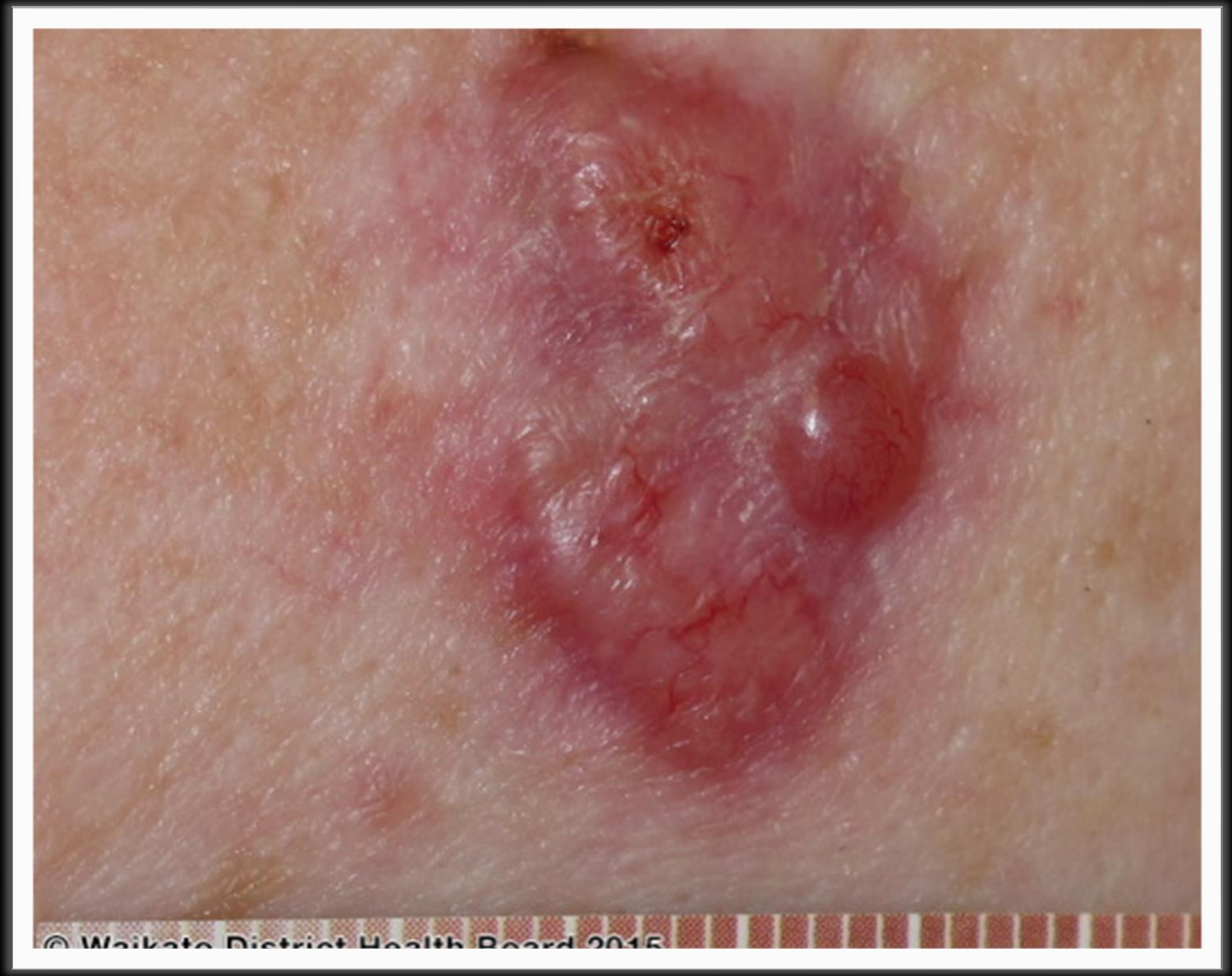
What is non-melanoma skin cancer?

Websites

- Cancer.org.au – for patients
- https://wiki.cancer.org.au/australia/Guidelines - for clinicians
- https://www.cancer.org.au/assets/pdf/basal-cell-carcinoma-or-squamous-cell-carcinoma-keratinocyte-cancer-quick-reference-guide
- https://www.cancer.org.au/assets/pdf/basal-and-squamous-cell-carcinoma-english
- Clinical practice guidelines available for download

Prevention is better than cure

- Sun protection SPF 50+ sunscreen
- Hats
- Long sleeved shirts, long pants
- Staying out of the sun in the middle of the day
- Use the SunSmart App

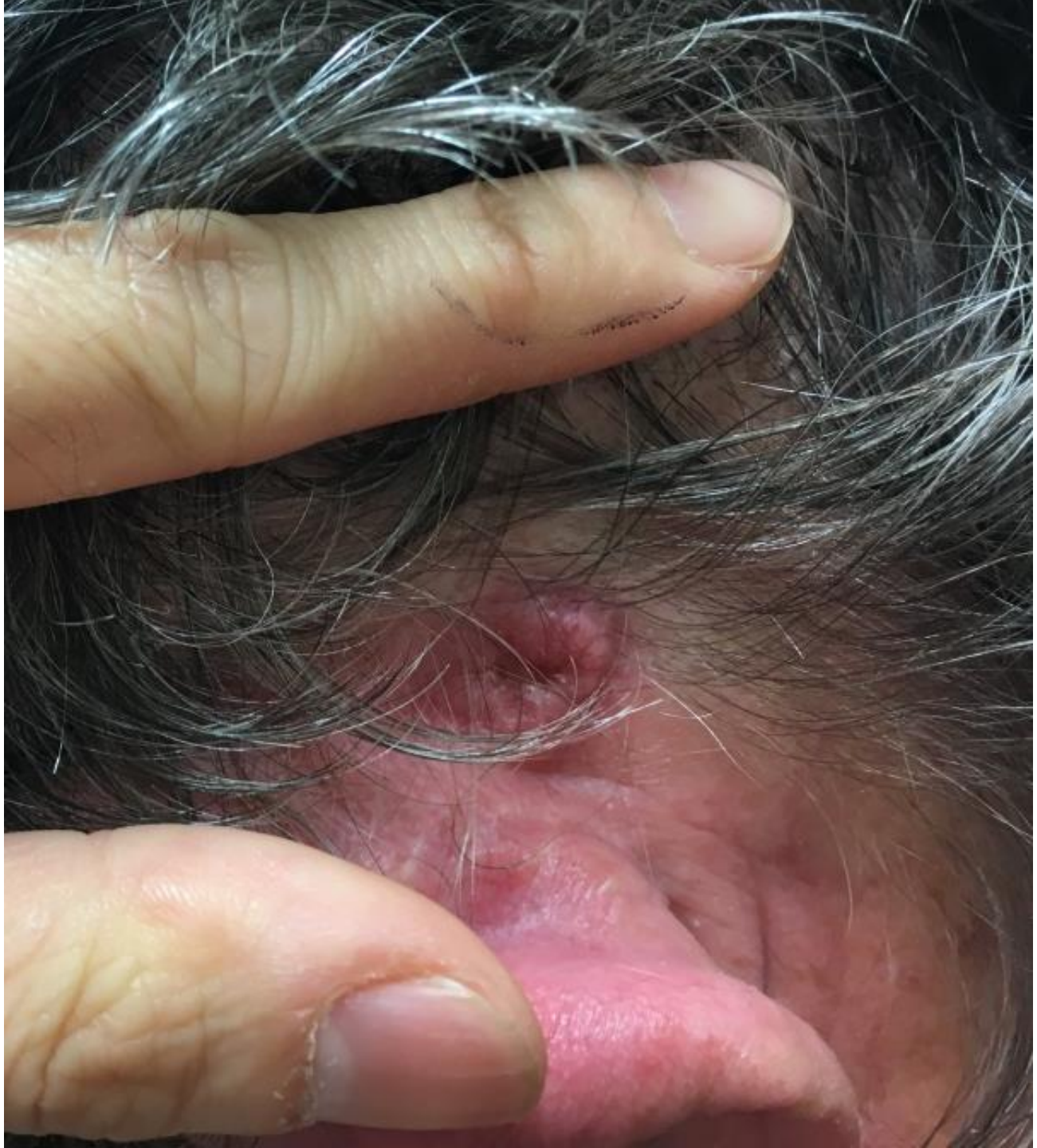


Basal Cell Carcinomas

BCC subtypes

- Macro subtypes
  - Nodular
  - Superficial (multifocal)
  - Morphoeic = Sclerosing

- Histological descriptors :
  - Pigmented
  - Infiltrating
  - Micronodular, multifocal
  - Sclerosing
  - Perineural/lymphatic invasion



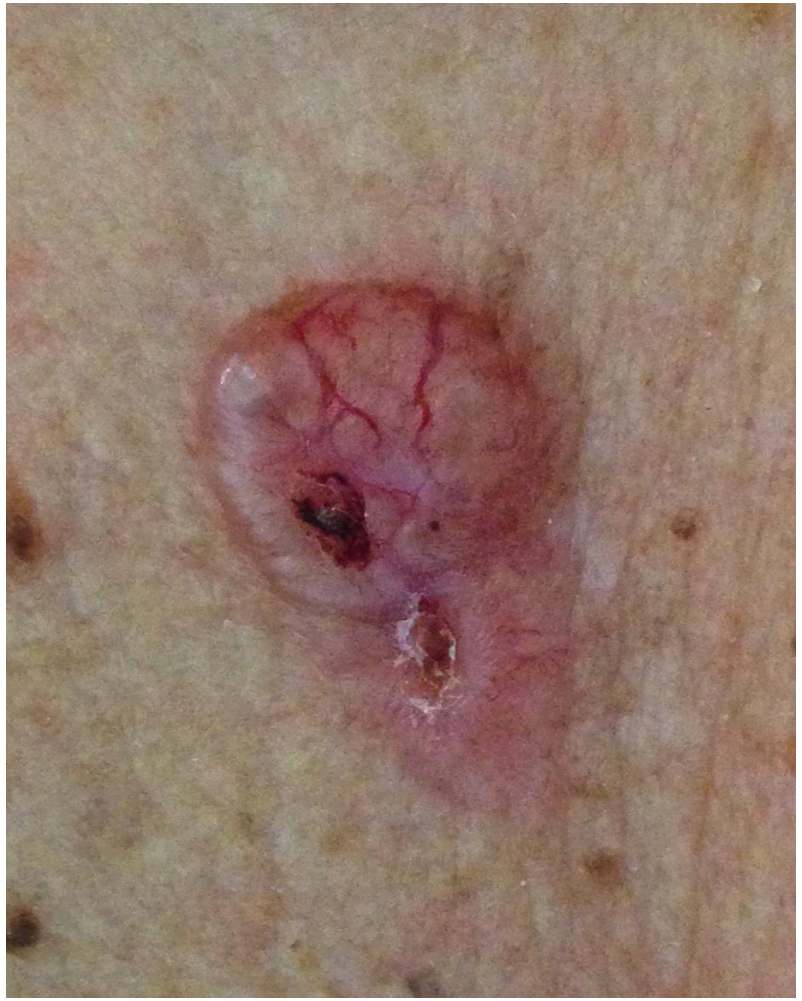
Nodular BCC
= Low risk in most locations

Eg Nodular BCC on back

Margin 2-3mm clears 85%

Margin 4-5mm clears 95%

= 5% risk of recurrence



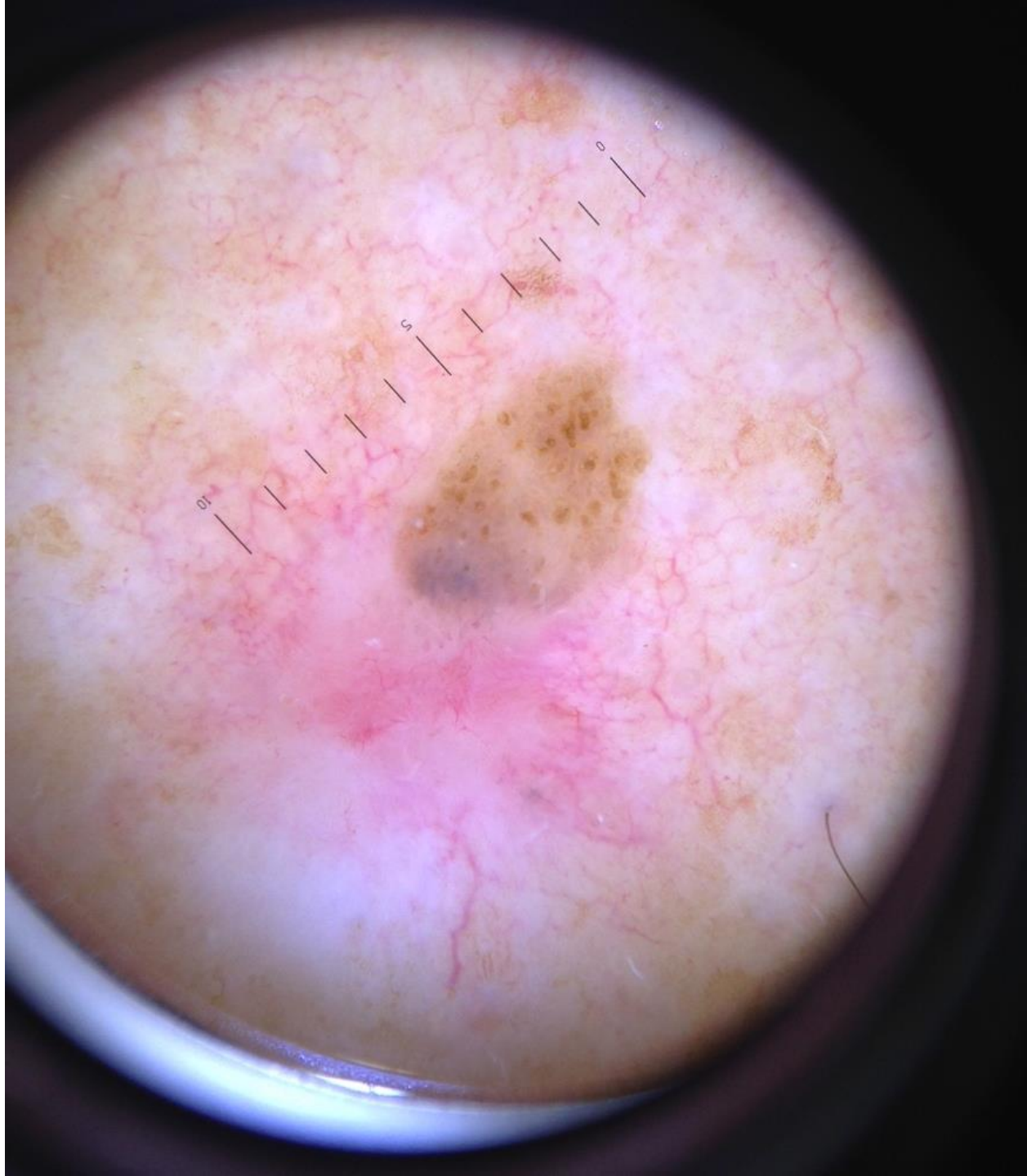
Superficial BCC

Surgical Excision

2-3mm margins – often insufficient in high risk sites

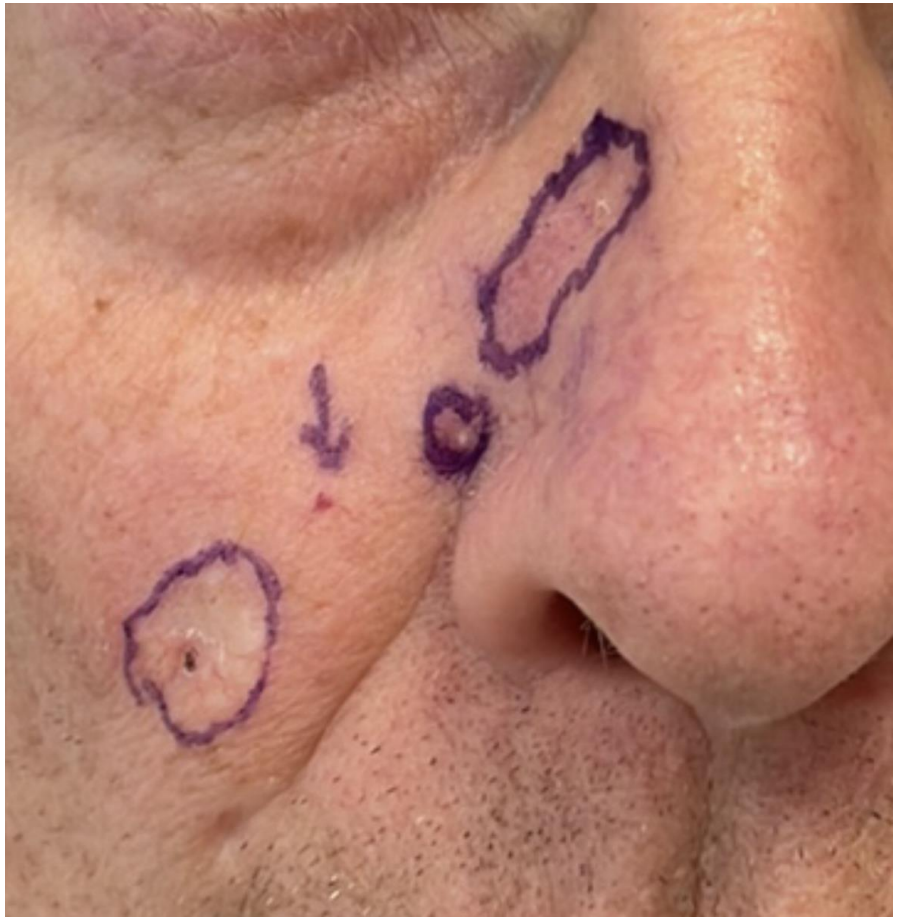
Destructive Methods :

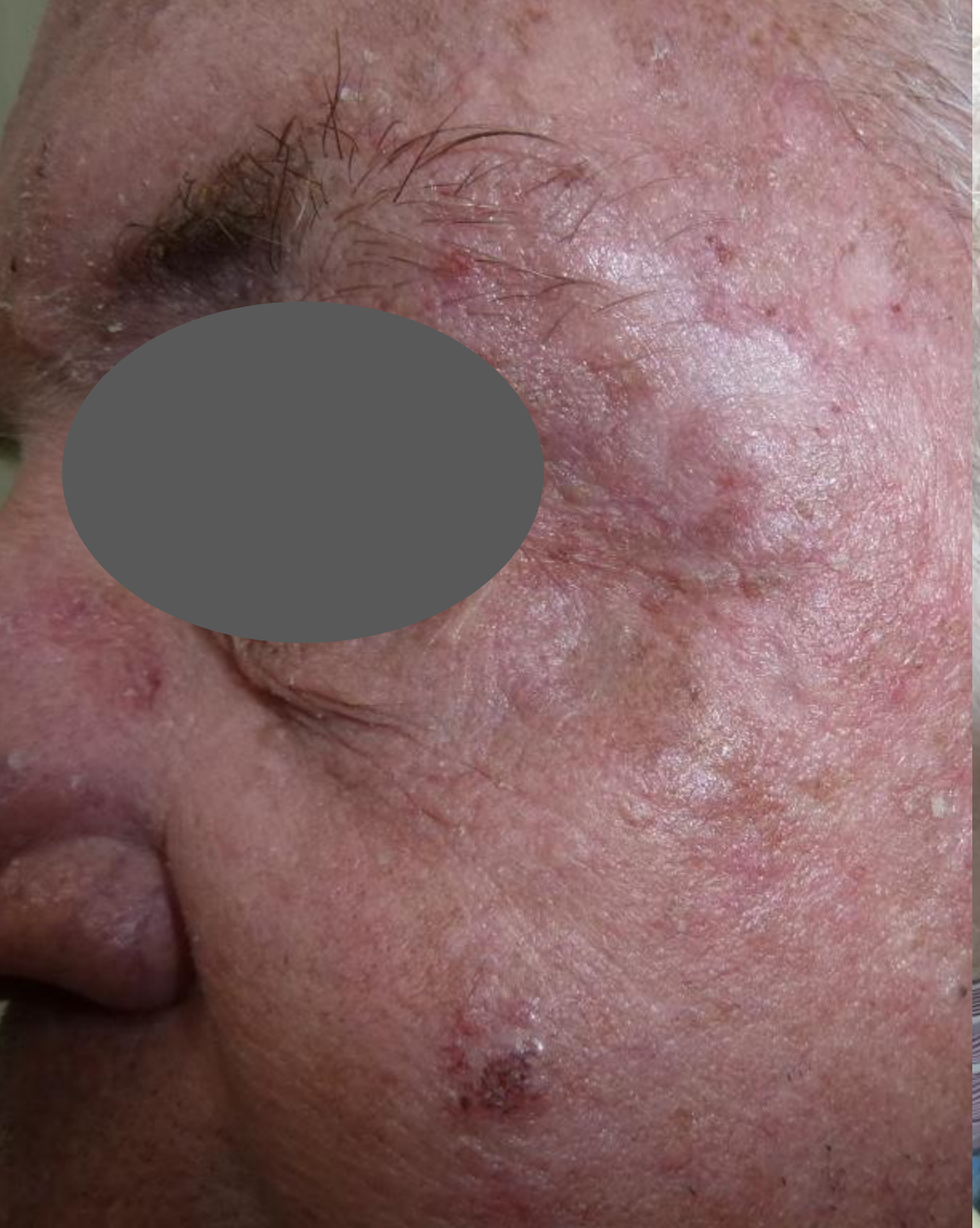
- Curette and Cautery
- PDT
- Imiquomod
- Efudix
- Cryotherapy
- Mohs surgery



Morphoeic BCC

- Sclerotic or scar-like
- 5-10% of BCCs
- Poor definition of borders
- Deeply invasive/infiltrative
- Often asymptomatic
- Often missed or misdiagnosed
- Excision margin of 5mm : often insufficient





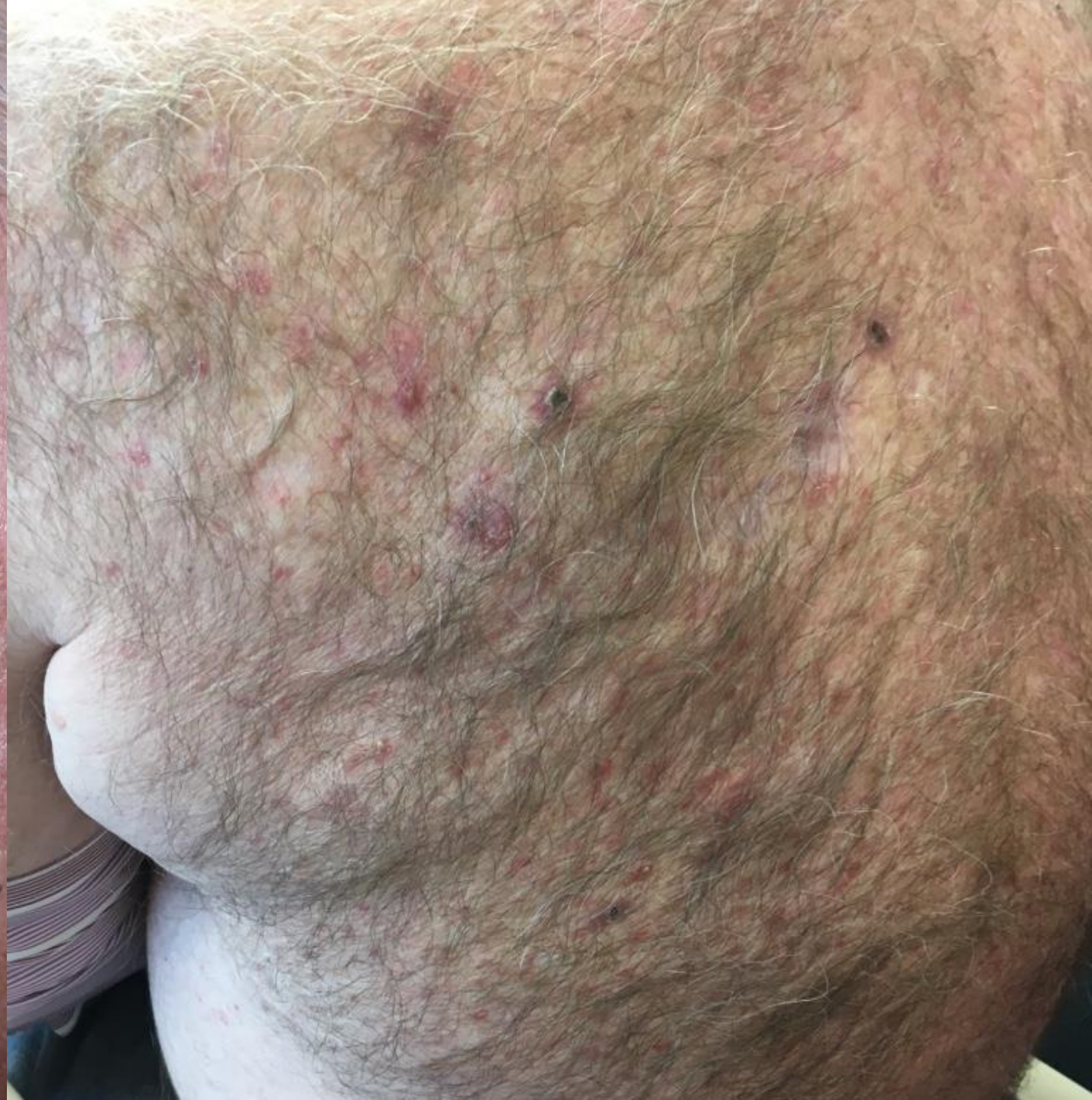


Table IV. National Comprehensive Cancer Network stratification of low- versus high-risk BCC

Parameters	Low risk	High risk
Clinical		
Location*/size†	Area L <20 mm Area M‡ <10 mm	Area L ≥20 mm Area M ≥10 mm Area H§
Borders	Well defined	Poorly defined
Primary vs recurrent	Primary	Recurrent
Immunosuppression	No	Yes
Site of prior radiation therapy	No	Yes
Pathologic		
Growth pattern	Nodular, superficial‖	Aggressive¶
Perineural involvement	No	Yes

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BCC, Basal cell carcinoma.

*Area L consists of trunk and extremities (excluding hands, feet, nail units, pretibia, and ankles); area M consists of cheeks, forehead, scalp, neck, and pretibia; and area H consists of central face, eyelids, eyebrows, periorbital skin, nose, lips, chin, mandible, preauricular and postauricular skin/sulci, temple, ear, genitalia, hands, and feet.

†Greatest tumor diameter.

‡Location independent of size may constitute high risk.

§Area H constitutes a high-risk area on the basis of location, independent of size.

‖Other low-risk growth patterns include keratotic, infundibulocystic, and fibroepithelioma of Pinkus.

¶Having morpheaform, basosquamous (metatypical), sclerosing, mixed infiltrative, or micronodular features in any portion of the tumor.

High risk BCC :

Location

- Area L ≥ 20mm
- Area M ≥ 10mm
- Area H (head and neck)

Poorly defined

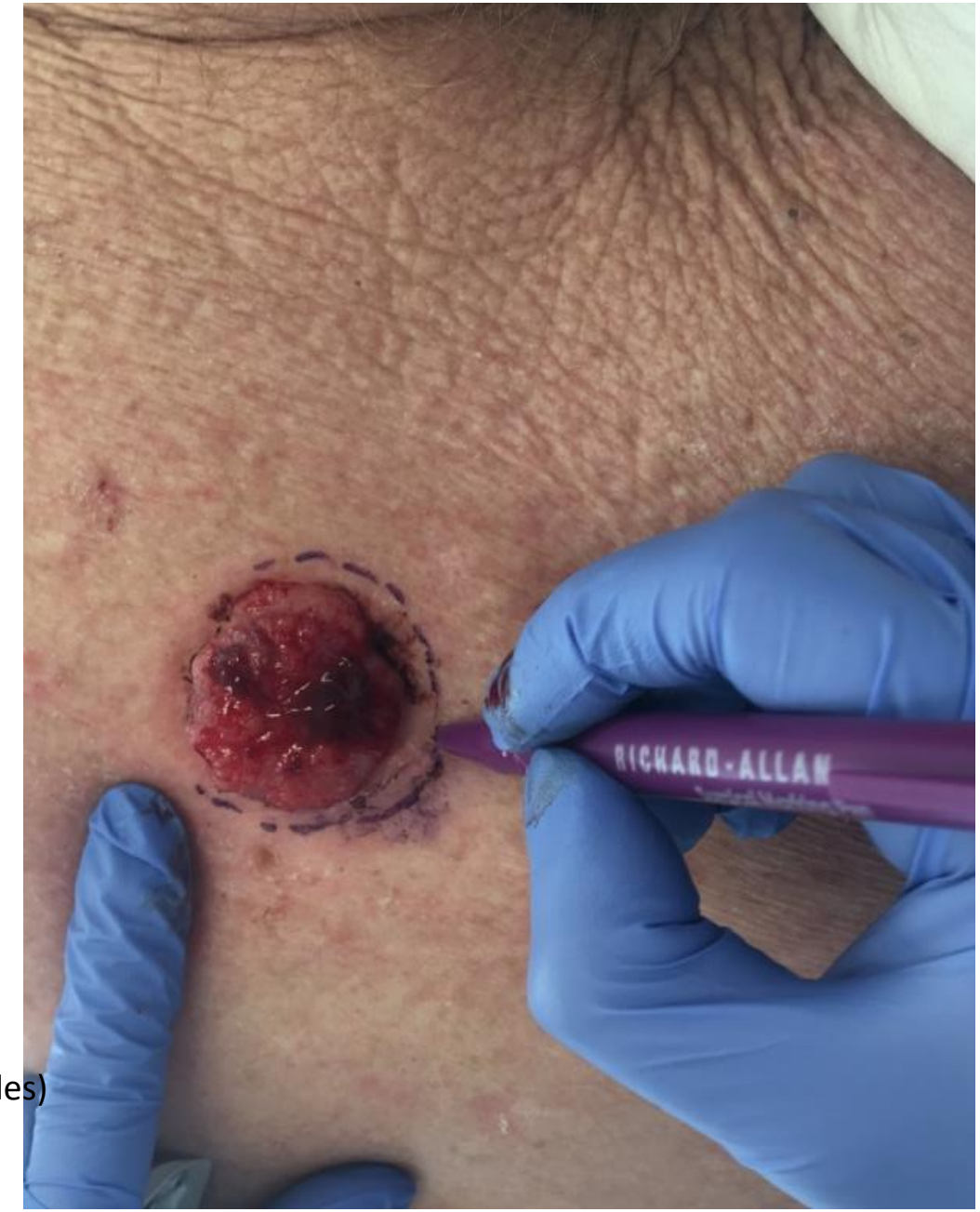
Recurrent

Prev radiotherapy site

Immunosuppressed patient

Aggressive growth pattern*

Perineural involvement



- Later slide
- Area L : trunk and extremities (except hands, feet, nails, pretibia, ankles)
- Area M : cheeks forehead, scalp, pretibia
- Area H : head and neck, ear, genitalia, hands, feet

Aggressive subtypes of BCC

Morphoeic = scar like

Sclerosing

Infiltrating

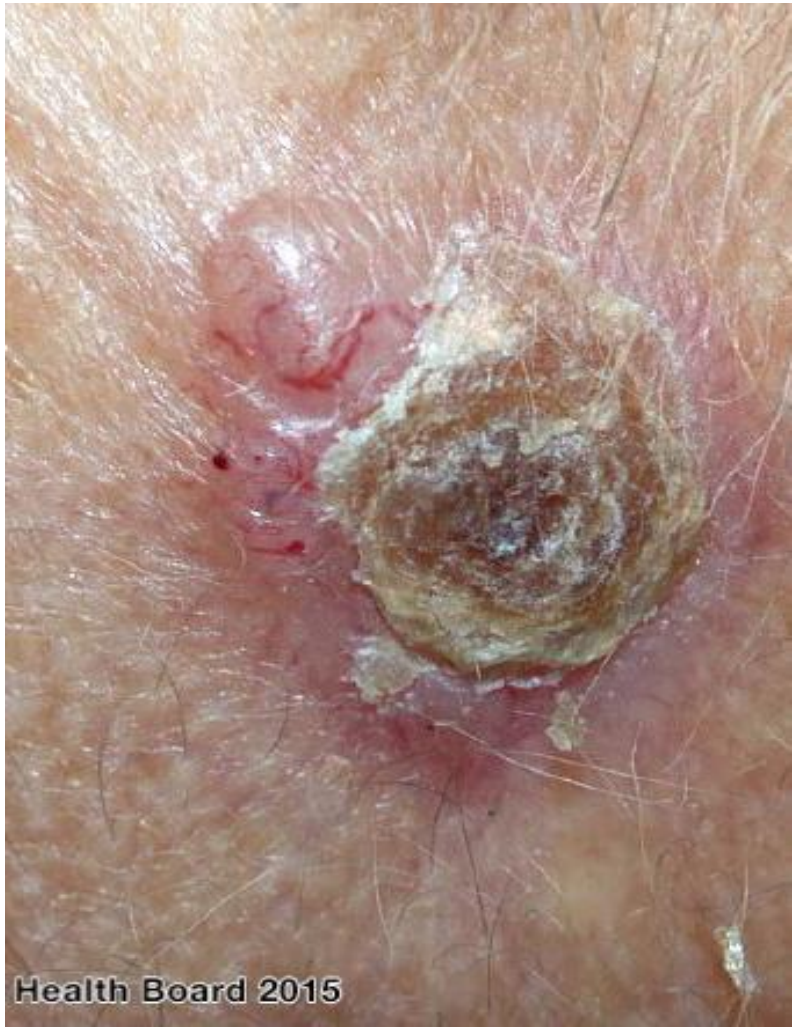
Basosquamous

- poor prognosis as high recurrence rate

- Margins of 5-10mm

OR consider Mohs surgery

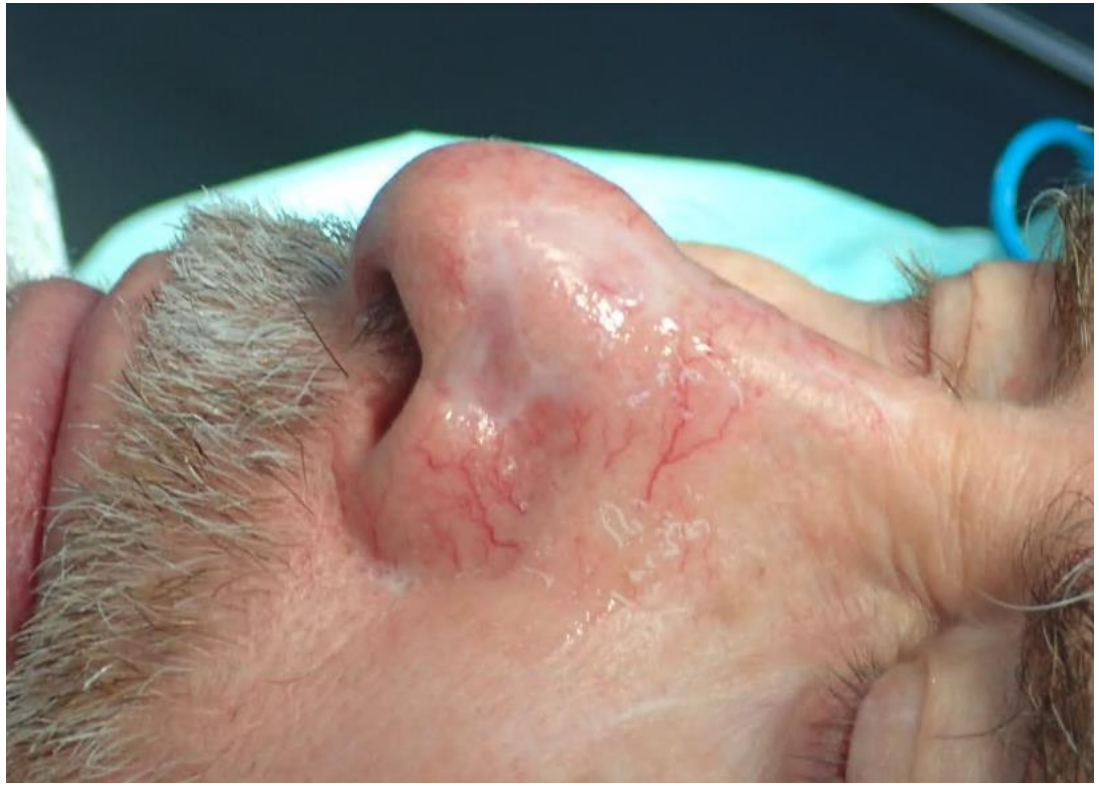
Excision : depending on location up to 10mm margins



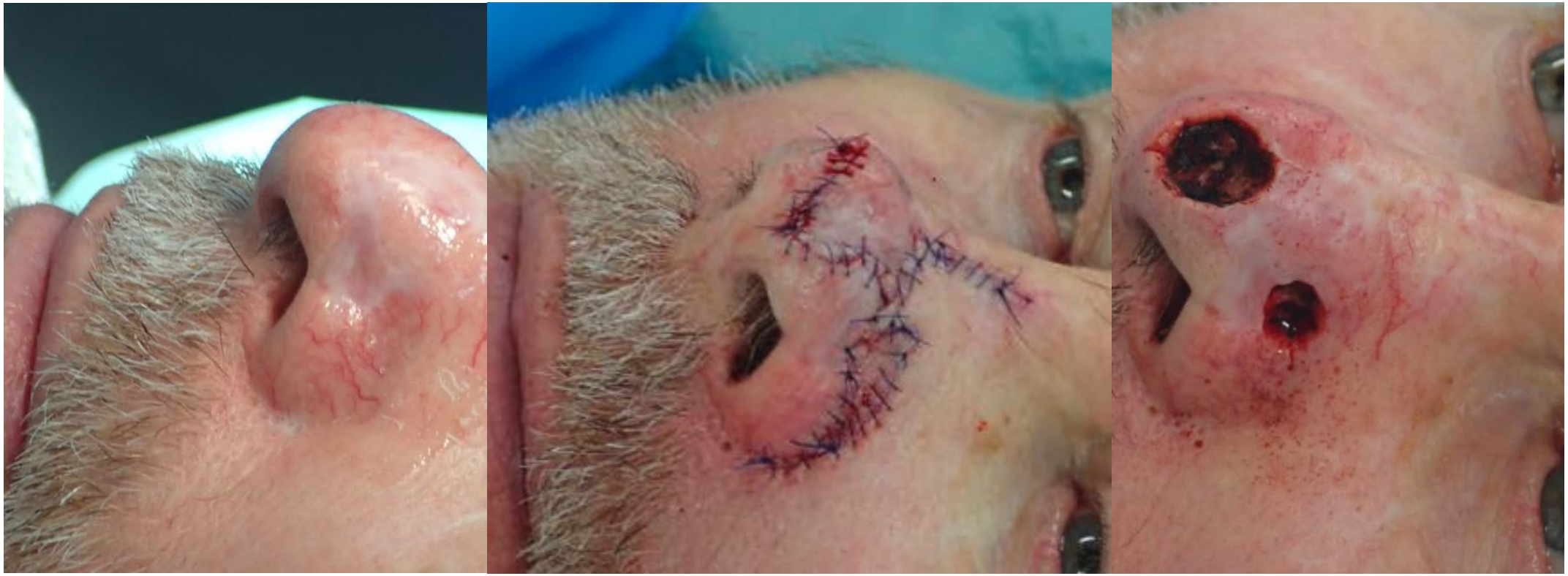
RECURRENT BCC

- Hard to cure
- Worst on central face
- Very high risk of recurrence, hard to manage deep margins
- Best to excise primarily with a good margin

- Margins are 5-10mm for recurrent lesions
- Mohs surgery

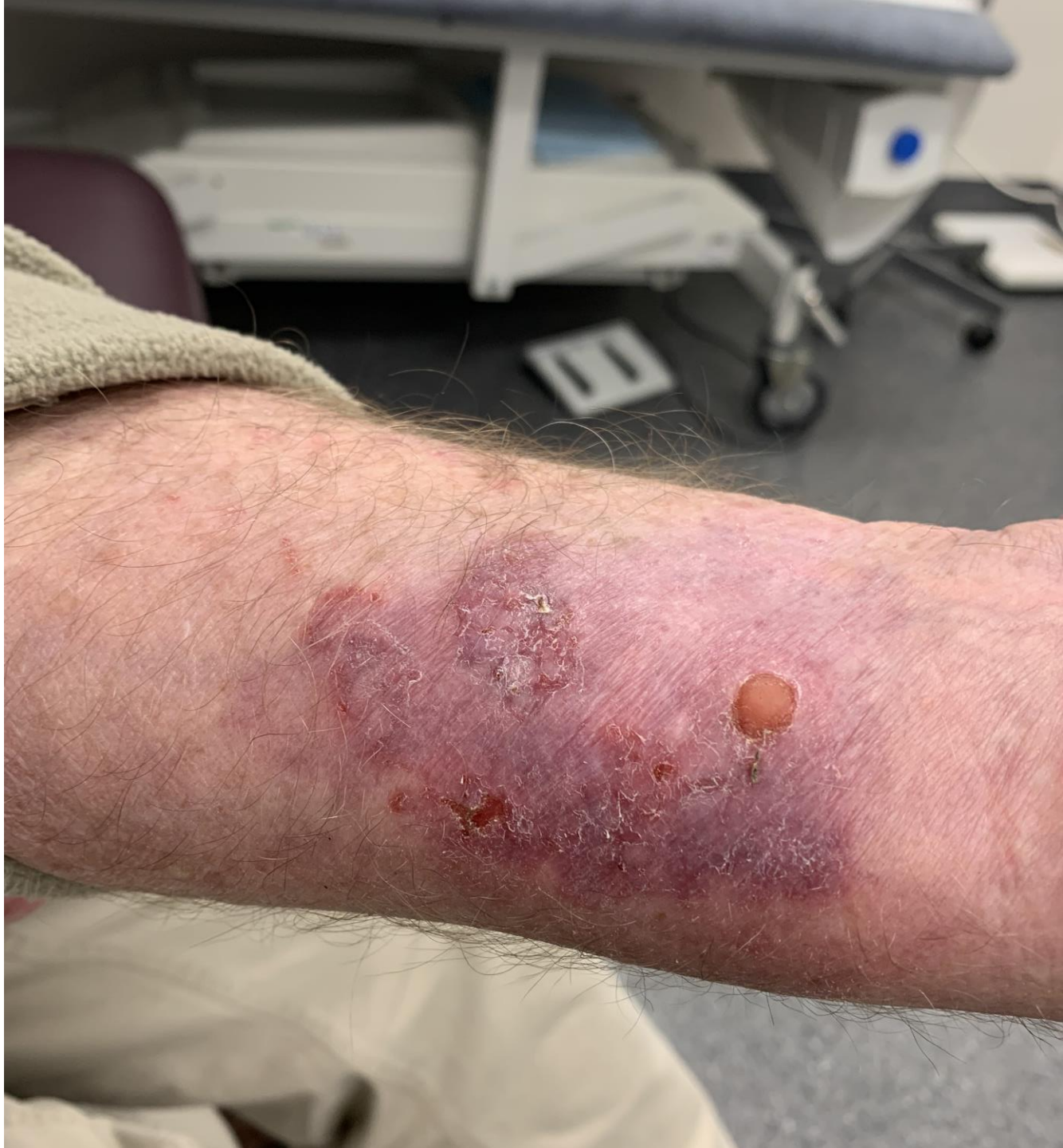


Tumours in scar tissue

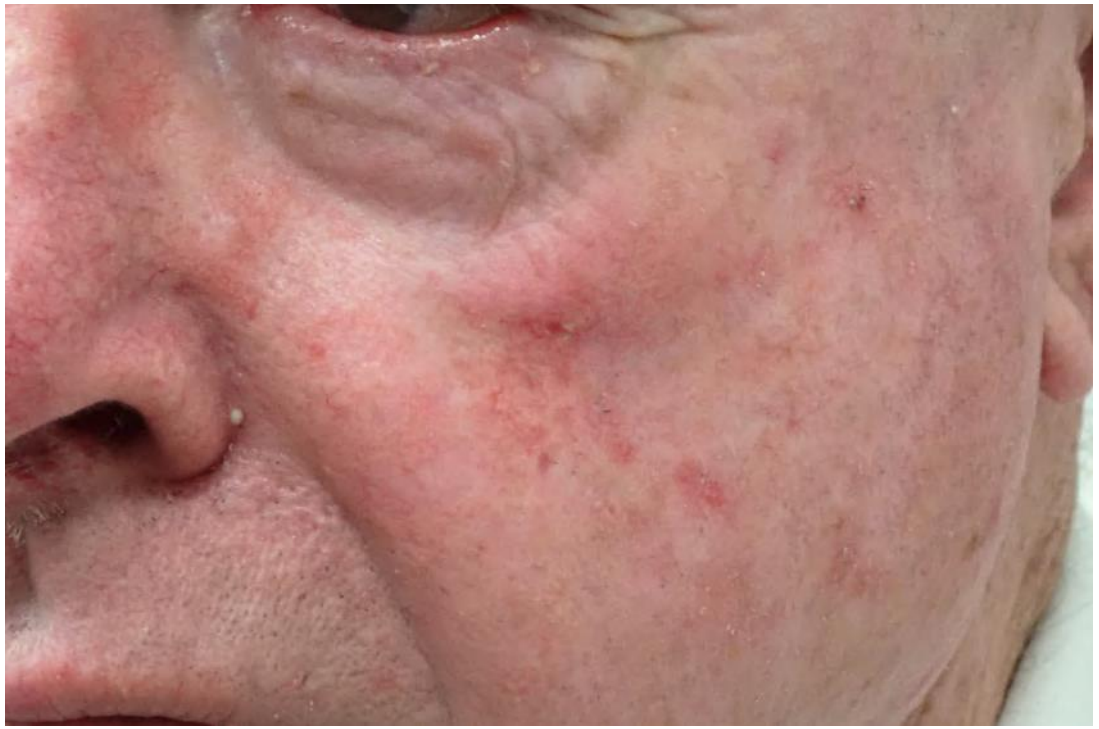


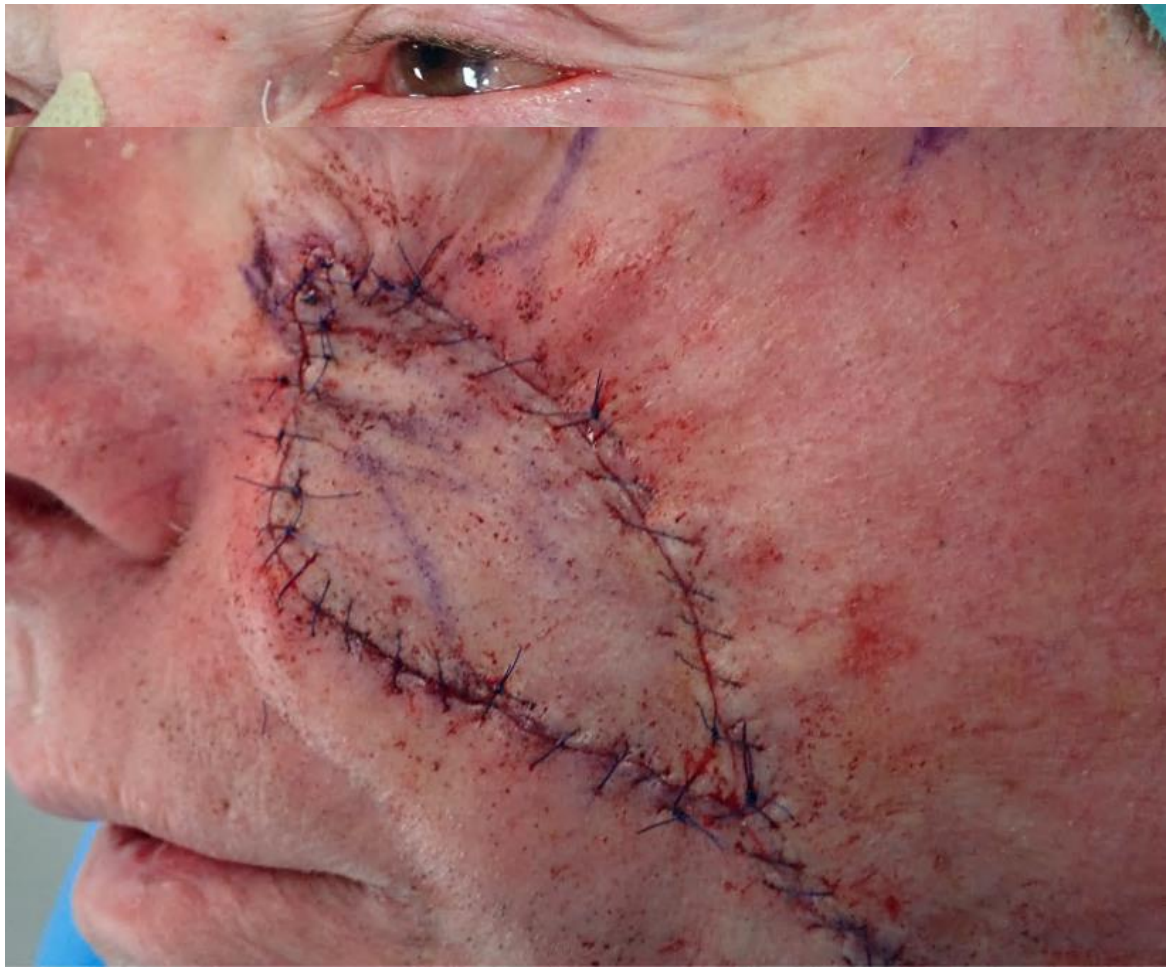
Recurrent BCC

- Large superficial with nodular component
- Previous excision with graft, recurred along edge of graft
- Nodule in centre
- Radiotherapy ?
- Referred for Mohs surgery for clearance
- Plastics to close



Poorly defined tumours





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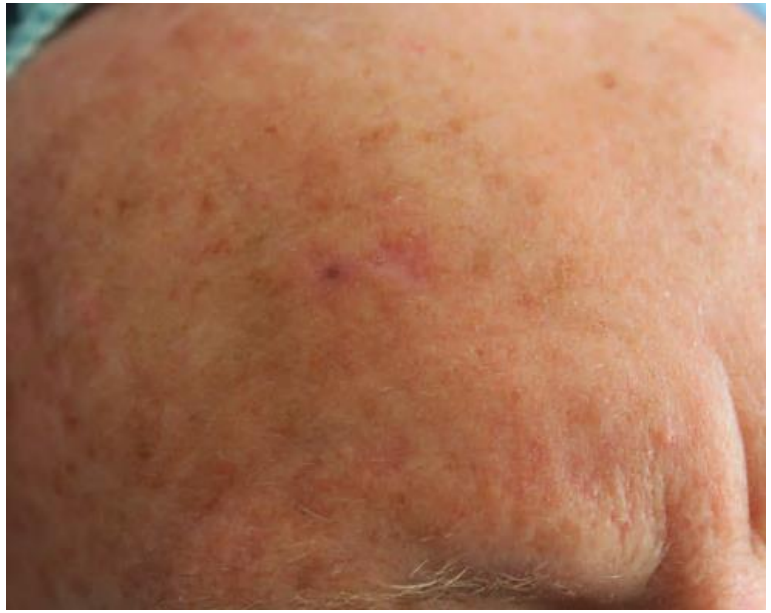
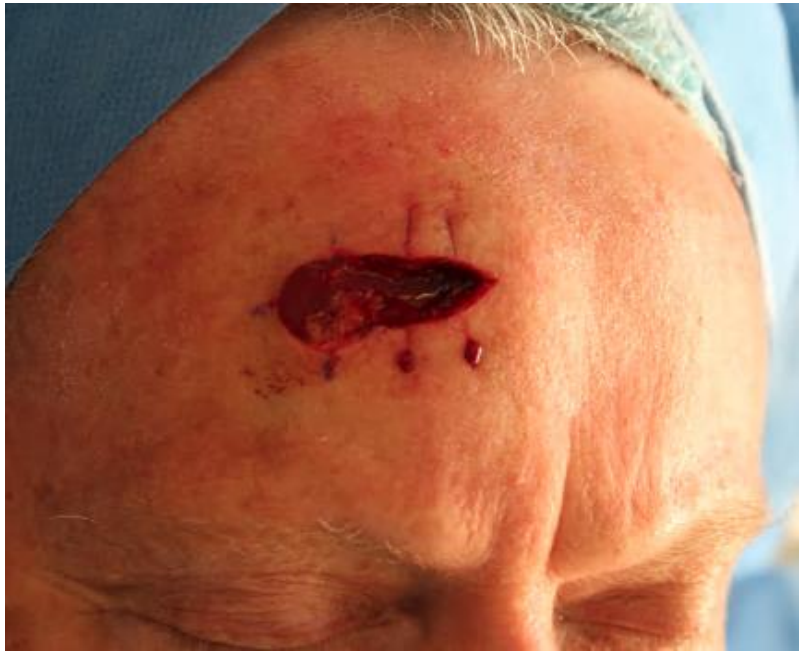
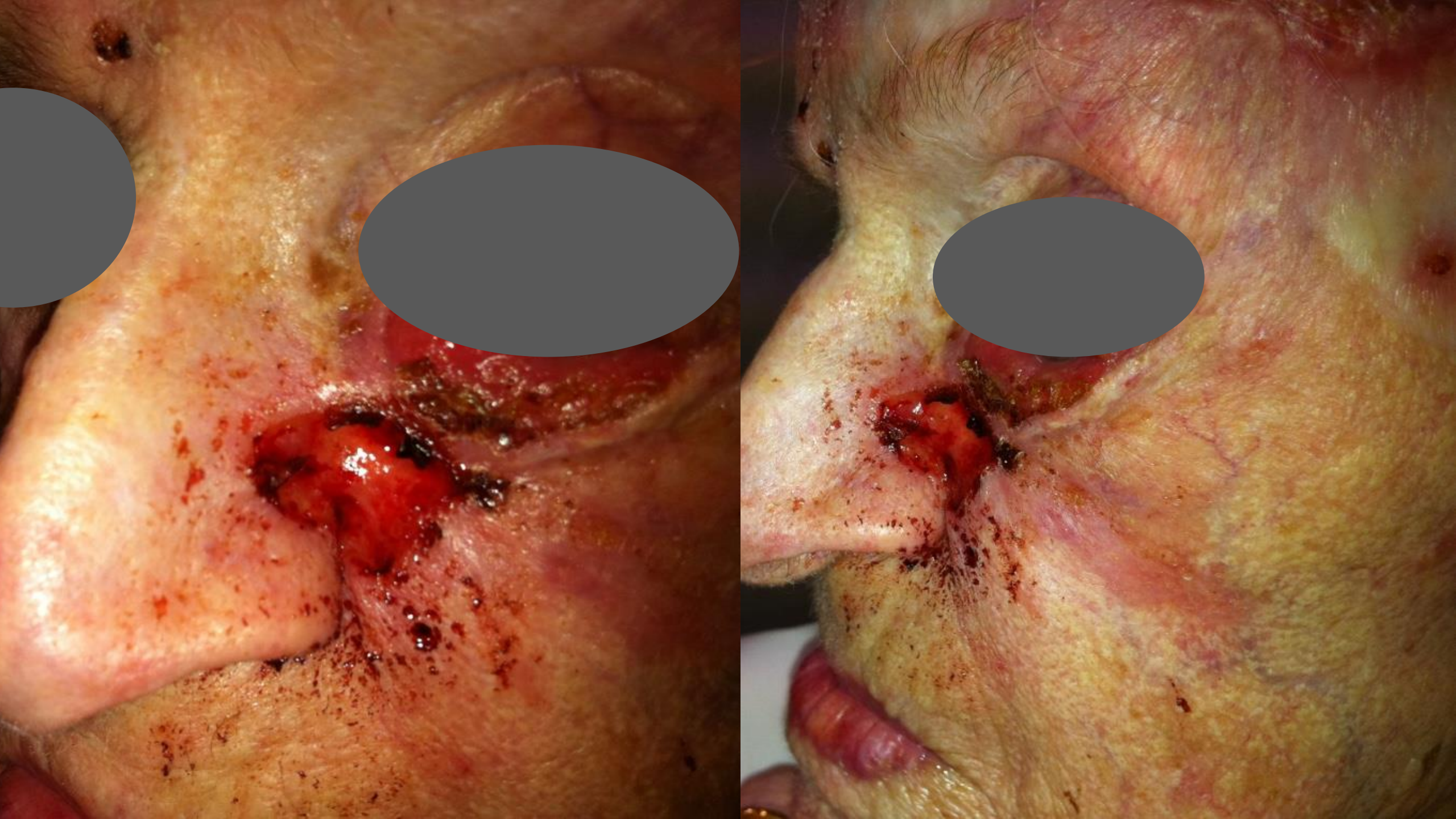




Poor prognostic indicators

- Poorly defined
- Recurrent lesion
- Basisquamous/metatypical/infiltrating
- Desmoplastic (fibrous/sclerotic changes)
- Large tumour size
- Neural involvement
- Dermal lymphatic spread
- Location
- Consider Referral



BCC Summary

Size	Histo subtype	Low risk site	Margins	High Risk Site	Margins
Small	Superficial	Destructive	2-3mm	Destructive	2-3mm
<20mm	Nodular	Excision	4mm	Excision	4-10mm
	Infiltrative	Excision	5-10mm	Referral Mohs	5-10mm
Large	Superficial	Destructive	3-5mm	Destructive	2-3mm
>20mm	Nodular	Excision	4-10mm	Referral/Mohs	4-10mm
	Infiltrative	Referral/Mohs	5-10mm	Referral/Mohs	5-10mm

Excision is reasonable for ALL lesions, bear in mind morbidity and scar issues.

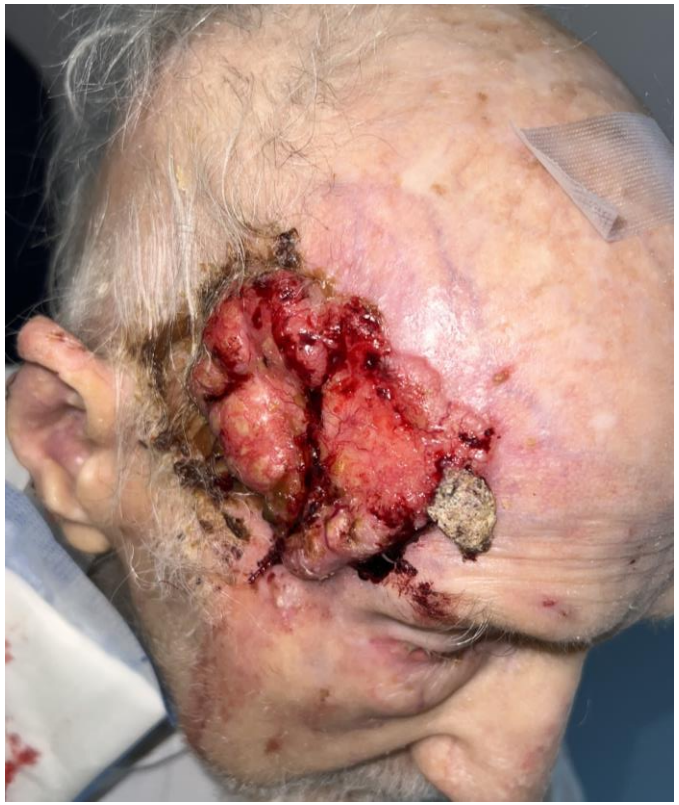
MOHs surgery can be used for all lesions, but is BEST for difficult locations with cosmetic concerns, and infiltrative lesions. COST.

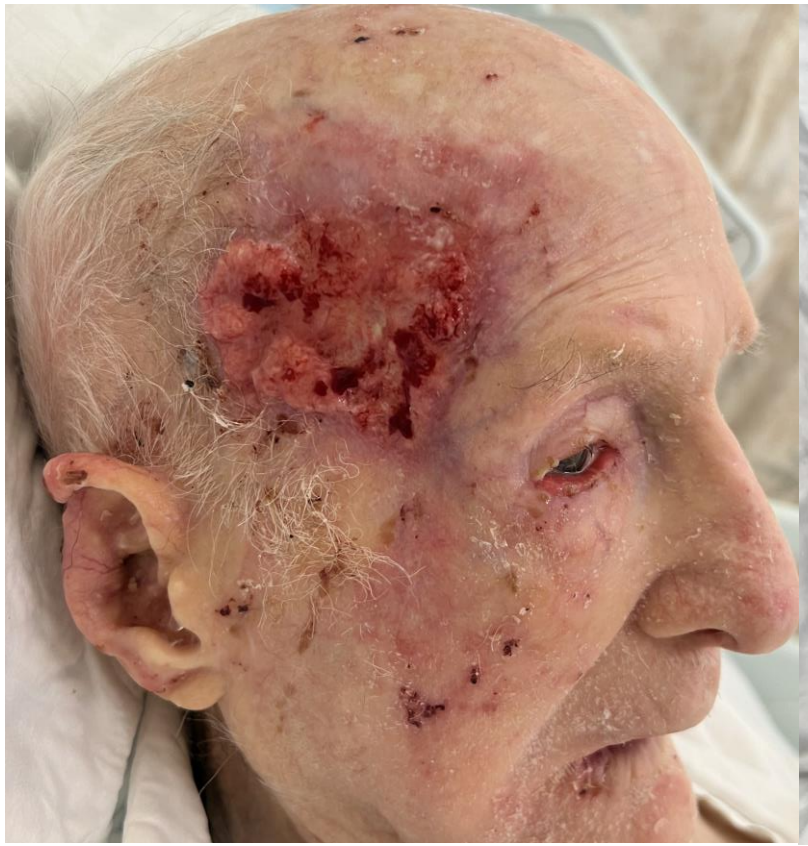
Hedgehog inhibitors

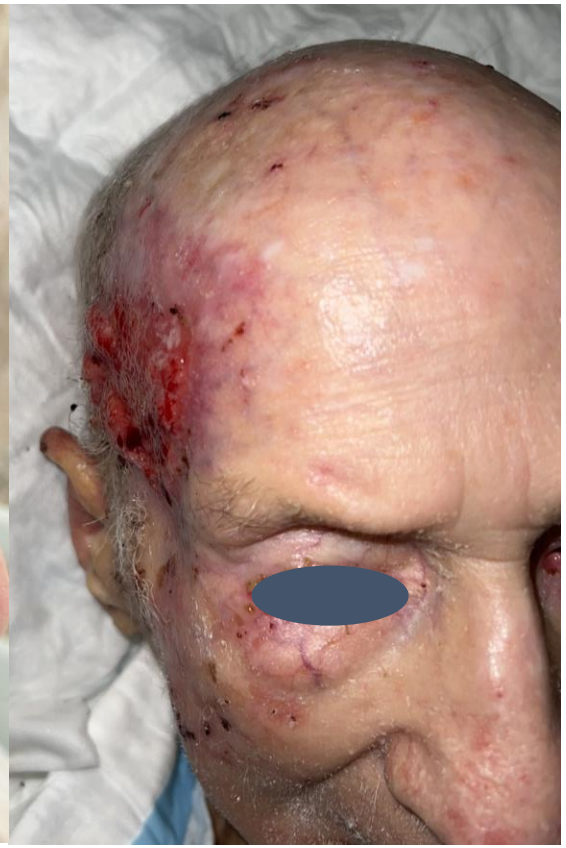
- Vismodegib and sonidegib
- Specialised drugs program
- Tumours must be inoperable- letter from surgeon
- Tumours must be not suitable for radiotherapy – letter from radiation oncologist
- Application form : sent to HPOS for approval
- Category X
- 2 forms of contraception
- Affects fertility

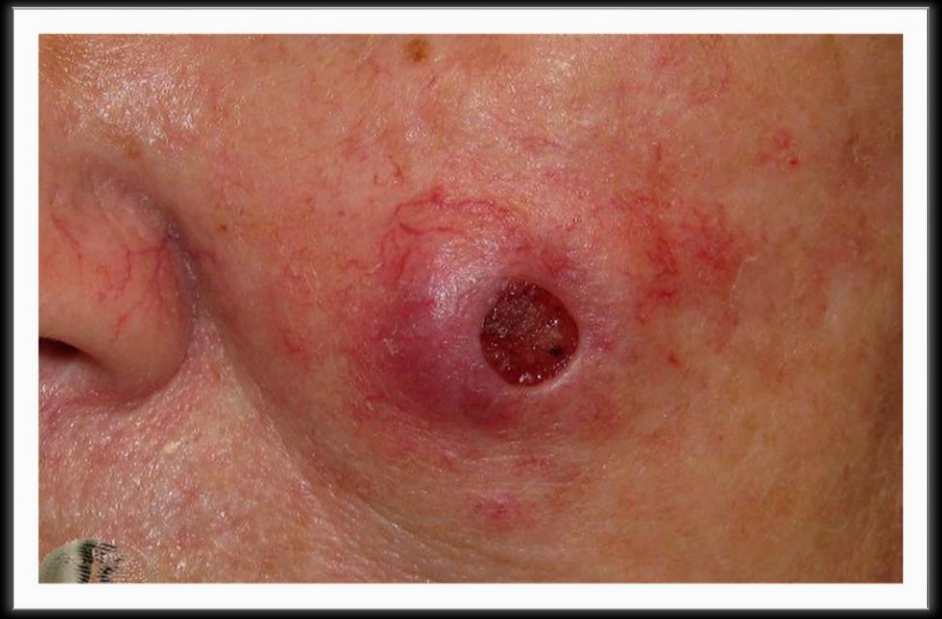
- Side effects
- Muscle spasms
- Alopecia
- Dysgeusia
- Decrease appetite
- Weight loss
- Fatigue
- GI symptoms
  - Nausea, diarrhoea, vomiting, constipation

97yo M refused surgery and RTx
- vismodegib 150mg po daily









Squamous Cell Carcinoma

Risk Factors

- Sun exposure
- Age
- Fair skin
- Immunosuppresion

- Less common risks
  - HPV exposure
  - Arsenic exposure
  - Photosensitivity
  - Familial cancer syndromes

Other factors affecting prognosis

- Recurrence
- Pt immunosuppression
- Location of lesion (ear, lip, mask area of face)
- Depth and level of invasion
- Size (diameter) of lesion >2cm worse prognosis
- Worse with prev radiotherapy scars, edges of wounds, etc
- Smoking
- In-transit, regional or distant metastases

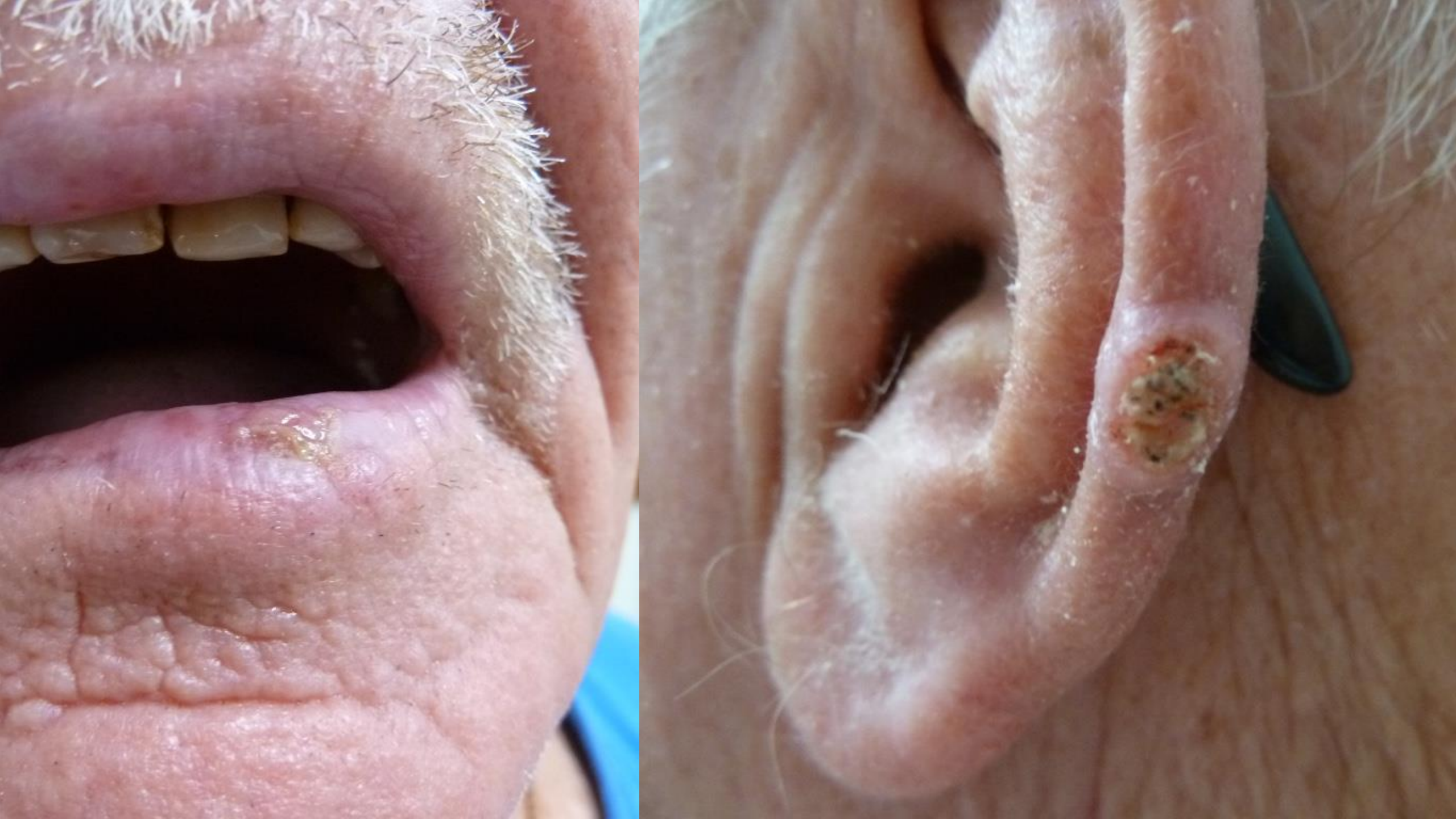


Table III. National Comprehensive Cancer Network stratification of low versus high risk cSCC

Parameters	Low risk	High risk
Clinical		
Location*/size†	Area L <20 mm Area M‡ <10 mm	Area L ≥20 mm Area M ≥10 mm Area H§
Borders	Well defined	Poorly defined
Primary vs recurrent	Primary	Recurrent
Immunosuppression	No	Yes
Site of prior radiation therapy or chronic inflammatory process	No	Yes
Rapidly growing tumor	No	Yes
Neurologic symptoms	No	Yes
Pathologic		
Degree of differentiation	Well to moderately differentiated	Poorly differentiated
High-risk histologic subtype‖	No	Yes
Depth (thickness or Clark level)¶	<2 mm, or I, II, III	≥2 mm or IV, V
Perineural, lymphatic, or vascular involvement	No	Yes

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cSCC, Cutaneous squamous cell carcinoma.

*Area L consists of trunk and extremities (excluding hands, feet, nail units, pretibia, and ankles); area M consists of cheeks, forehead, scalp, neck, and pretibia; and area H consists of central face, eyelids, eyebrows, periorbital skin, nose, lips, chin, mandible, preauricular and postauricular skin/sulci, temple, ear, genitalia, hands, and feet.

†Greatest tumor diameter, including peripheral rim of erythema.

‡Location independent of size may constitute high risk.

§Area H constitutes high-risk on the basis of location, independent of size.

‖Adenoid (acantholytic), adenosquamous (showing mucin production), desmoplastic, or metaplastic (carcinosarcomatous) subtypes.

¶A modified Breslow measurement should exclude parakeratosis or scale/crust and should be made from base of the ulcer is present. If clinical evaluation of incisional biopsy suggests that microstaging is inadequate, consider narrow-margin excisional biopsy.

Histologic

- Well differentiated = good prognosis
- Moderately differentiated = moderate prognosis
- Poorly differentiated = poor prognosis

- WORSE Prognosis if
- Acantholytic, desmoplastic, spindle subtypes
- Perineural, lymphatic, vascular invasion

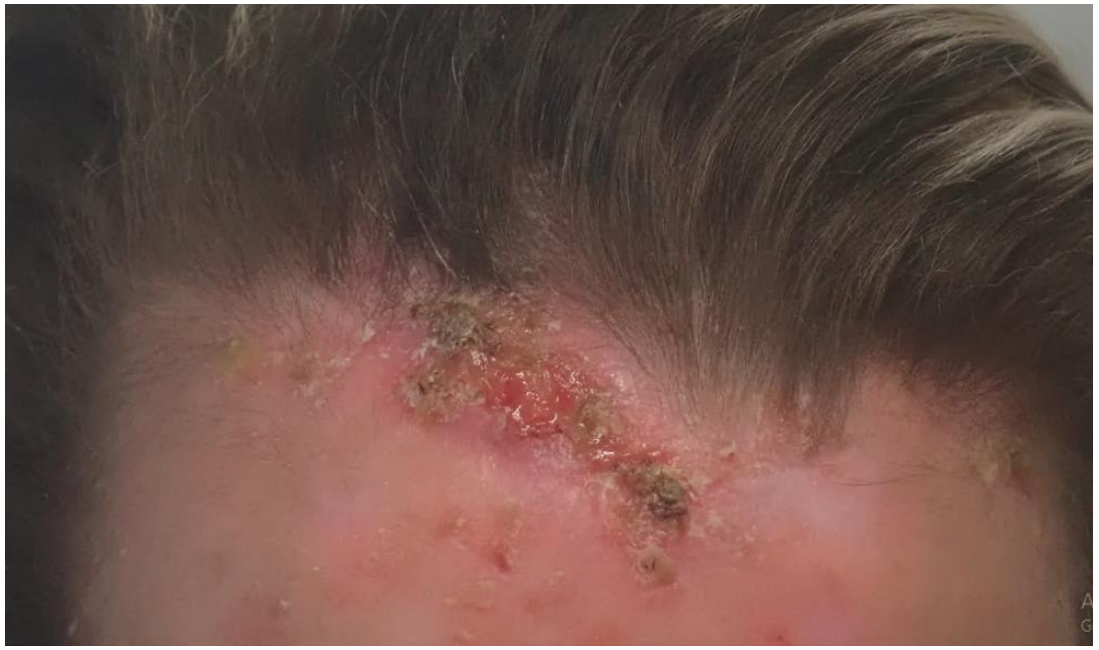
Margins (previously…..)

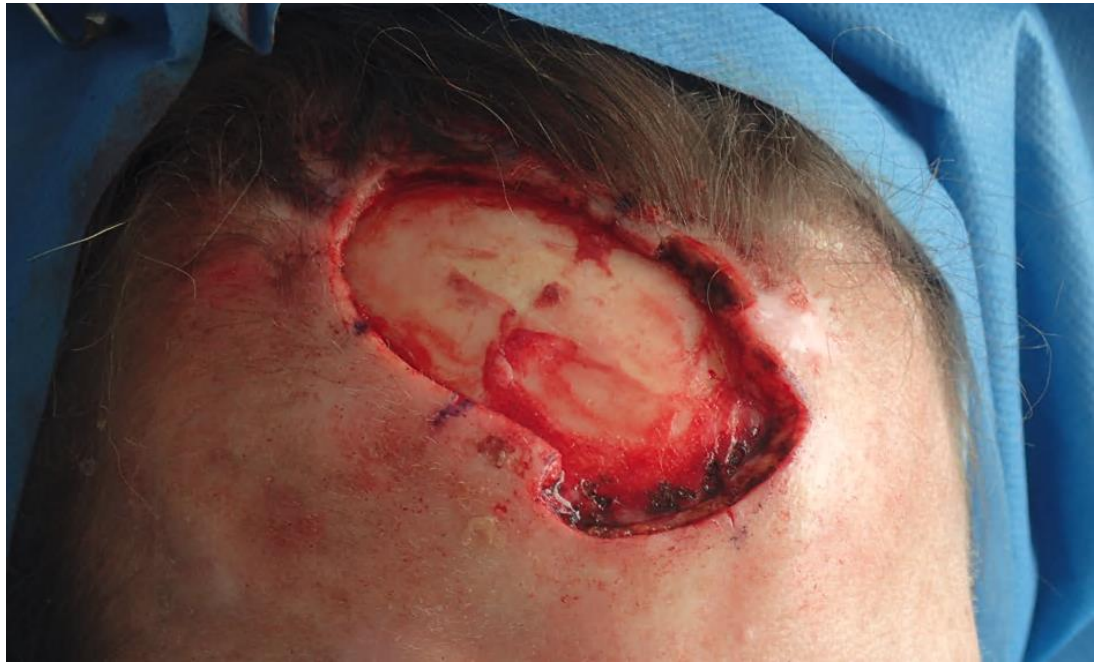
- Small SCC, well differentiated = 5mm margins (4-6mm)
- Moderately differentiated = 1cm margins (4-10mm) depends on location
- Poorly differentiated = 1cm margins +
- VERY high risk = consider 15mm margins
- Mohs in high risk areas

THOROUGH EXAMINATION FOR LYMPH NODES

- **Consider post op radiotherapy for high risk lesions**

Poorly defined tumour





SCC Summary (BWH classification)

Staging	No of high risk factors	Recommended Treatment	Margins	Referral	High risk factors
T0	In situ SCC	varies		depends	
T1	0	Excision	4-6mm to mid sc fat	depends	Tumor ≥2cm
T2a	1	Excision	4-6mm to mid sc fat	depends	Poorly differentiated histology
T2b	2-3	Excision	4-6mm or more	YES	Perineural invasion ≥0.1mm
T3	≥ 4	Excision	4-6mm or more	YES	Tumor invasion beyond sc fat

- Treatment Plan for patient
- C+C for low risk, primary cSCC in non terminal hair bearing areas
- Standard Excision 4-6mm margin to mid sc fat
- High risk : may use Standard Excision, CAUTION
- Mohs surgery for high risk SCC

Recurrent or Metastatic SCC

- 4% risk
- Risk is higher in immunosuppressed patients
- Based on retrospective reviews and case series
- Surgical resection +/- radiotherapy
- **Refer to MDT (Head and Neck Clinic @ Mater)**
- Chemotherapy : cisplatin, doxorubicin, 5FU, methotrexate, bleomycin, vindesine
- EGFR inhibitors eg cetuximab + radiotherapy
- Checkpoint inhibitors eg PD1 inhibitors – pembrolizumab (Trials)
- Consider Palliative care

Skin Checks: How often?

- Encourage Patient Self Examination – every change of season
- Varies with patient : depends on risk

- BCC patients :
  - Most : at least yearly
  - Multiple : 3-6 monthly
  - Gorlin’s patients : 3-6 monthly
- SCC patients :
  - Most yearly
  - Multiple or frequent cancers : 3-6 monthly

Transplant patients

- High Risk patients
- Need minimum yearly skin checks : GPs or dermatologists
- Treat all of their lesions aggressively
- 2 or more skin cancers : 3 monthly checks recommended
- Pre transplant skin check
- Sun protection advice
- Education about skin protection
- Repeat and reinforce sun protection
- 5% develop skin cancers at 5 years

Tips for excisions

- Excisions with vertical margins
- Margins measured from edge of lesion or scar
- TOTAL radial margin = initial primary excision + wider excision margin
- Primary Excision = 2-5mm margin, then do wider excision
- Re-excise until margins are clear
- If SNLB : do the wider excision AFTER LN mapping
- Depth of excision : TO FASCIA
  - Or to same depth as radial margin if deep subcutis

Mohs Surgery

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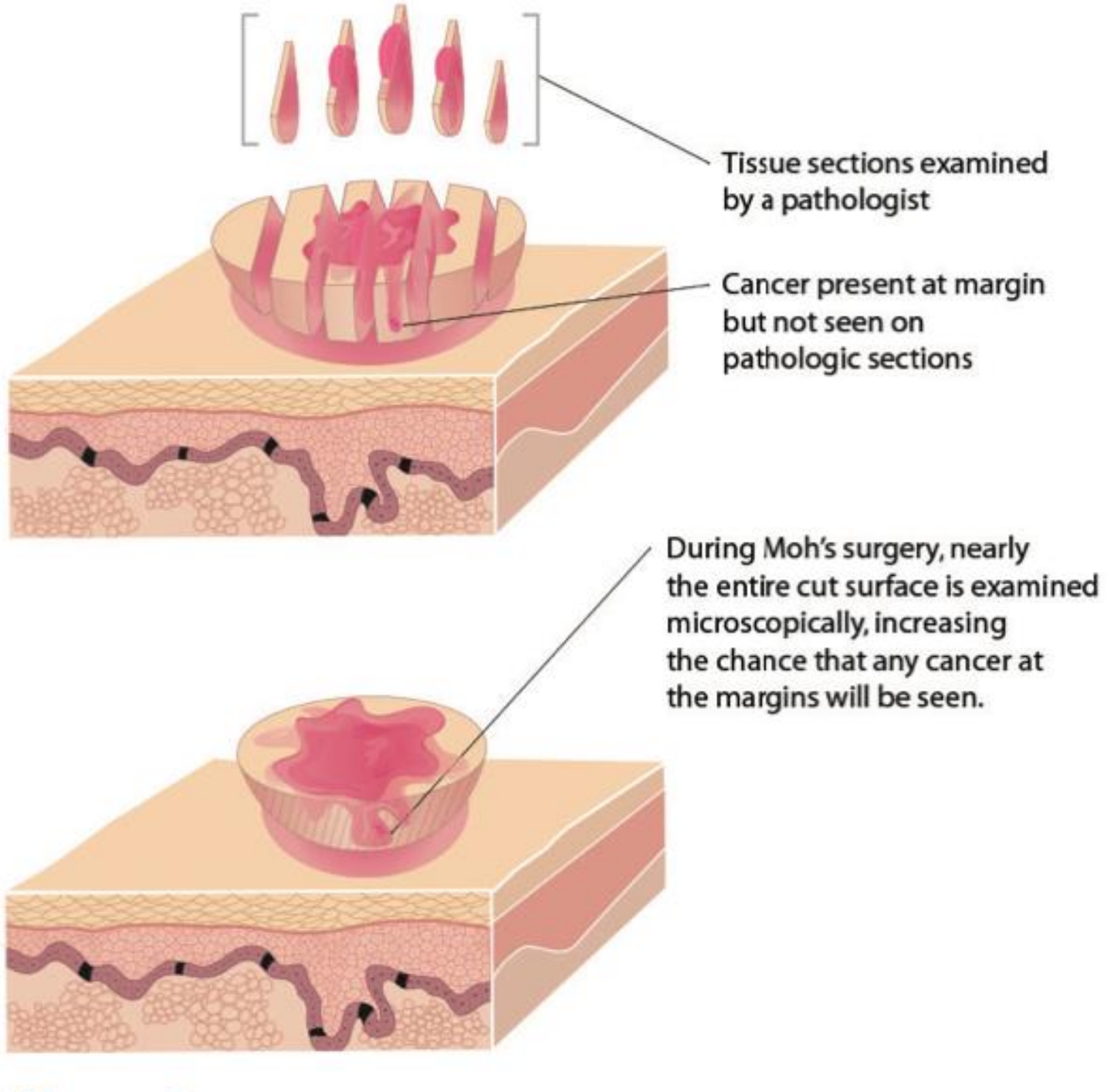
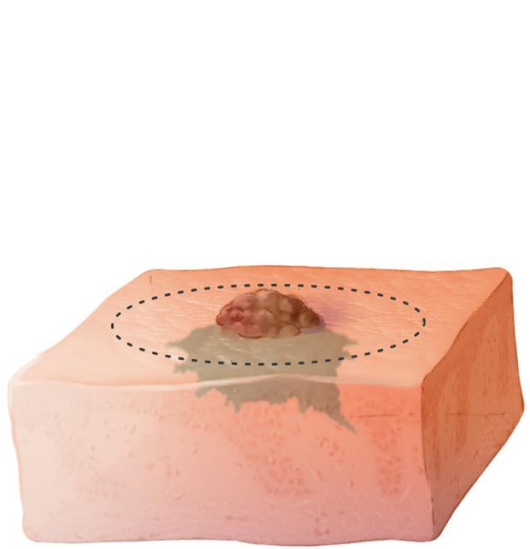
Looking at the pie crust



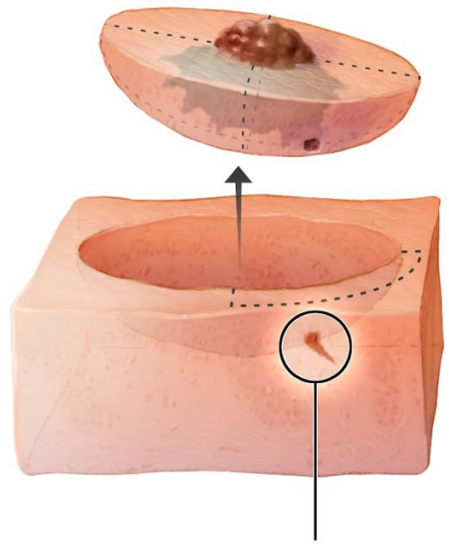
Mohs surgery versus standard excision

	Mohs	Standard excision
Tissue excision	Initial narrow margin	Wider margin
Tissue grossing	On site (oriented/inked/mapped)	Sent to pathology
Tissue sectioning	Oblique/horizontal	Vertical ("bread-loafing")
Margin evaluation	Total margin (lateral and deep)	Small percentage of true margin sampled
Histologic evaluation	Mohs surgeon	Pathologist
Tumor assessment	Tumor mapped/immediate excision	Tumor presence communicated

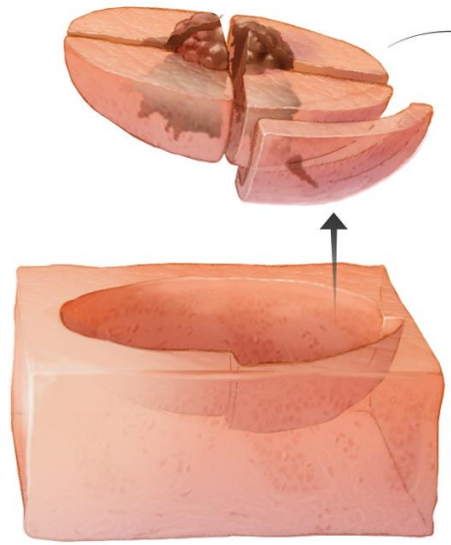
EXCISION FOR MohS MICROGRAPHIC SURGERY



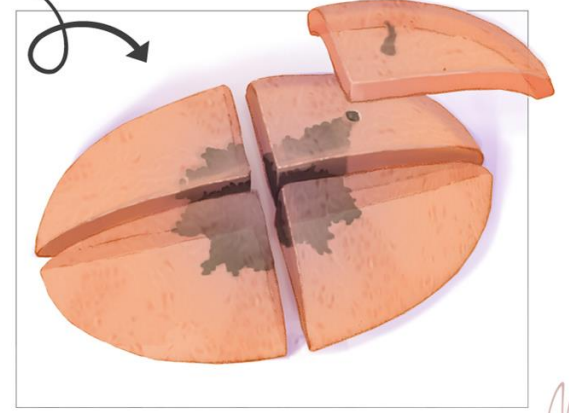
① Mohs surgical margin Layer 1



② Mohs surgical margin Layer 2. Extension of tumour (circled) is represented in Mohs histological sections.



③ Mohs surgical margin Layer 2

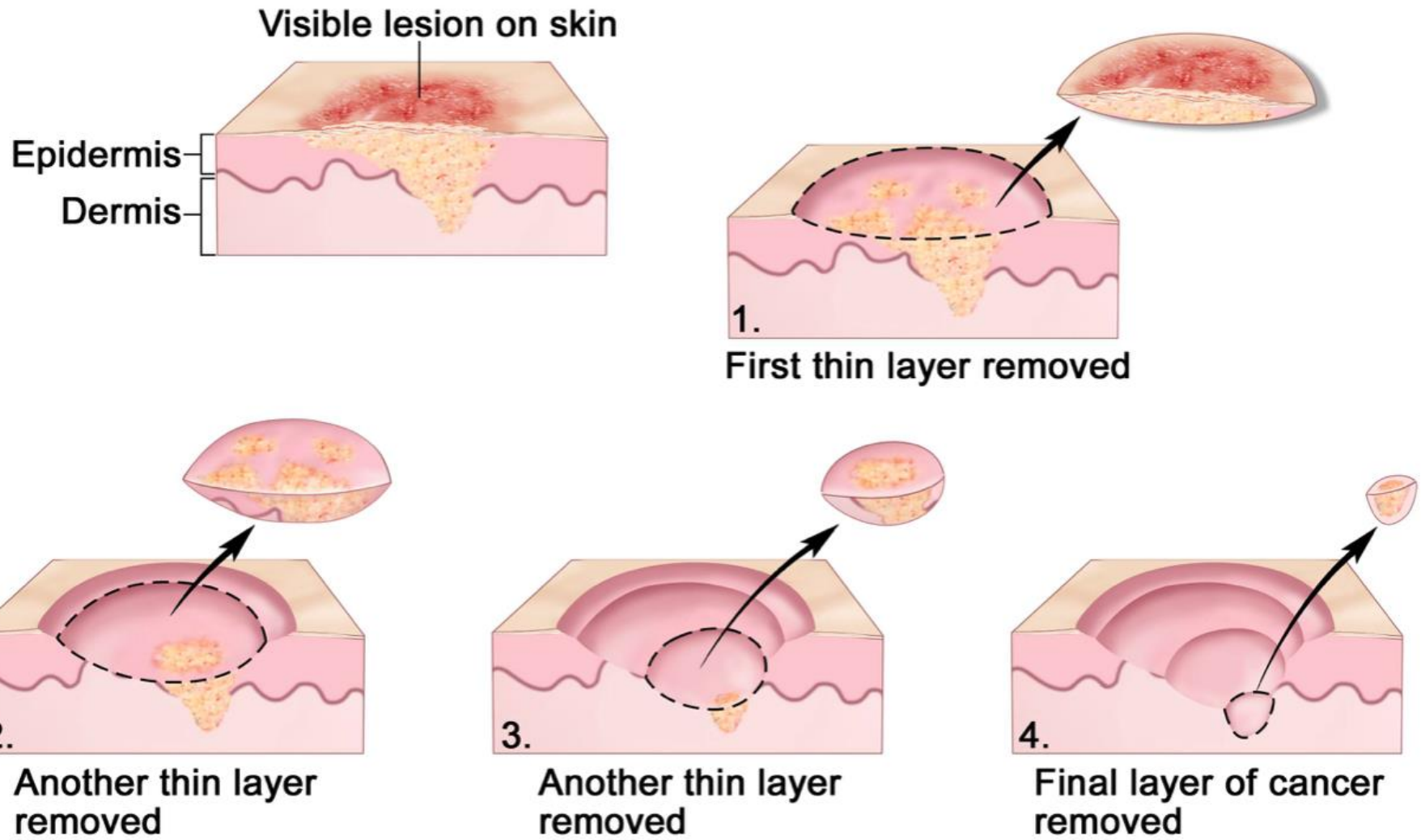


④ Deep and peripheral margins. Extension of tumour is represented in Mohs histological sections.

Mohs surgery for Skin cancers

- Gold standard
- Lowest recurrence rates
- Clearance on the day of surgery
- Tissue sparing, as no wide margins required
- Best cosmetic outcomes
- Treatment of choice for non melanoma skin cancers in high risk sites eg eyelids, nose, ears, lips, scalp, hands and feet, genitals

Mohs Surgery



Type of lesions best treated by Mohs surgery

- Cosmetically sensitive areas
- Tissue preservation
  - eg facial sites
- Tumours within scar tissue
- Large tumours
  - – to get clearance prior to closures
- Previous Radiotherapy areas
- Infiltrative BCC
- Morphoeic BCC
- Poorly defined BCC
- Poorly defined SCC
- Recurrent tumours

Criteria for performing Mohs micrographic surgery

Tumor characteristics
Large tumor (>2 cm)
Poorly defined clinical borders
Recurrent tumor
Incompletely excised (positive margins)
Aggressive histologic features
Morpheaform, micronodular, infiltrative BCC
Basosquamous features
Poorly differentiated and deeply infiltrative SCC
Perineural invasion
Chronic scar (Marjolin's ulcer)
Patient characteristics
Immunosuppressed
Irradiated skin
Genetic syndrome (eg, xeroderma pigmentosum, Gorlin or nevoid BCC)
Anatomic location
Areas where tissue preservation is essential (including eyes, nose, hands/feet, and genitalia)
Embryonic fusion lines (preauricular, nasolabial fold, inner canthus, and philtrum)
"Mask areas" of face (central face, periorbital, nose, lips)

BCC: basal cell carcinoma; SCC: squamous cell carcinoma.

Uncle Bob 78 M from regional NSW Recurrent BCC Left nose

- 4 excisions with surgeon :margins not clear

CLINICAL NOTES:

Skin lesion. Nodule left nose - BCC?.

MACROSCOPIC:

'Left nose'. The specimen consists of an oval shaped piece of skin 21x12x3mm bearing a cream nodule 13x9mm. All embedded. (Block A - 3p, B - 4p) IK L3-15 6-481

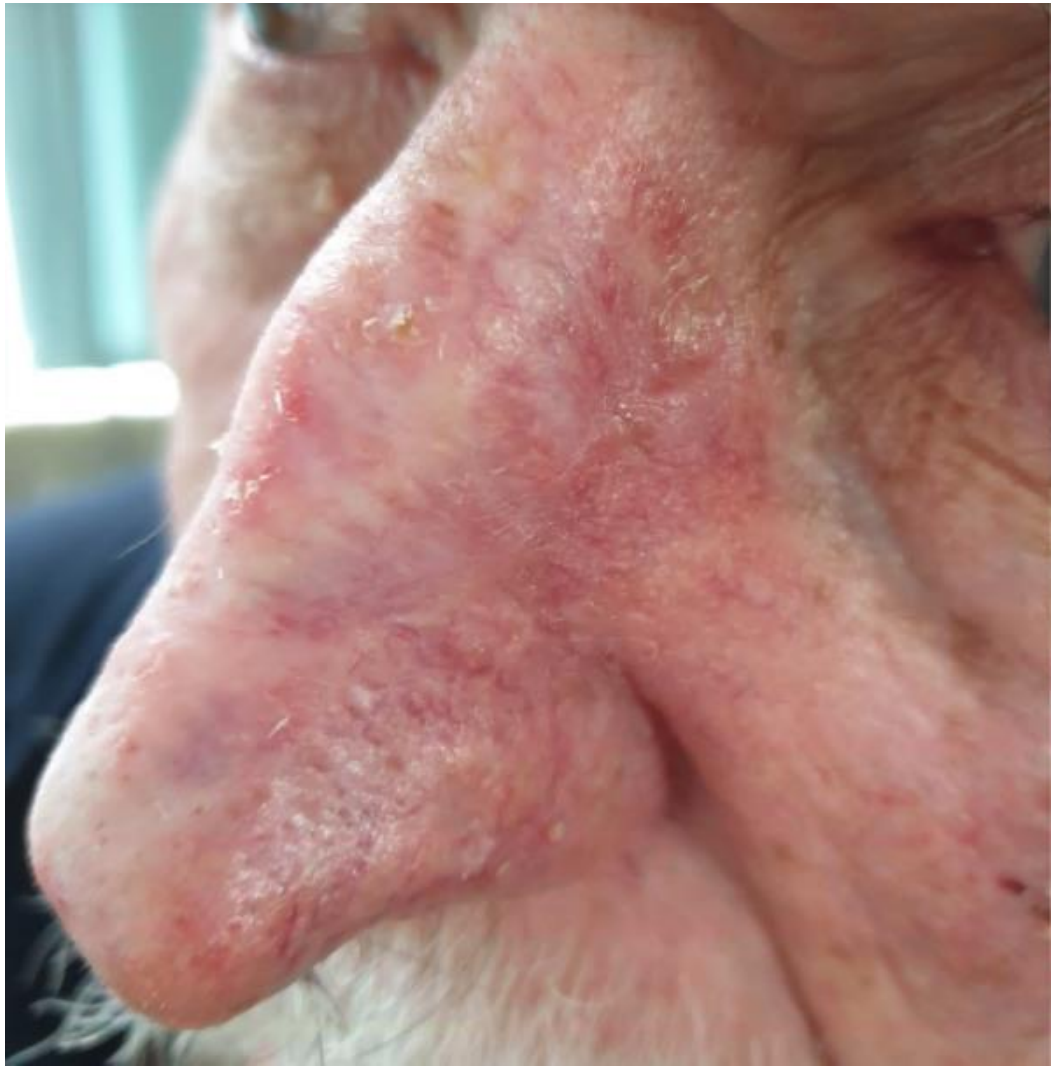
MICROSCOPIC:

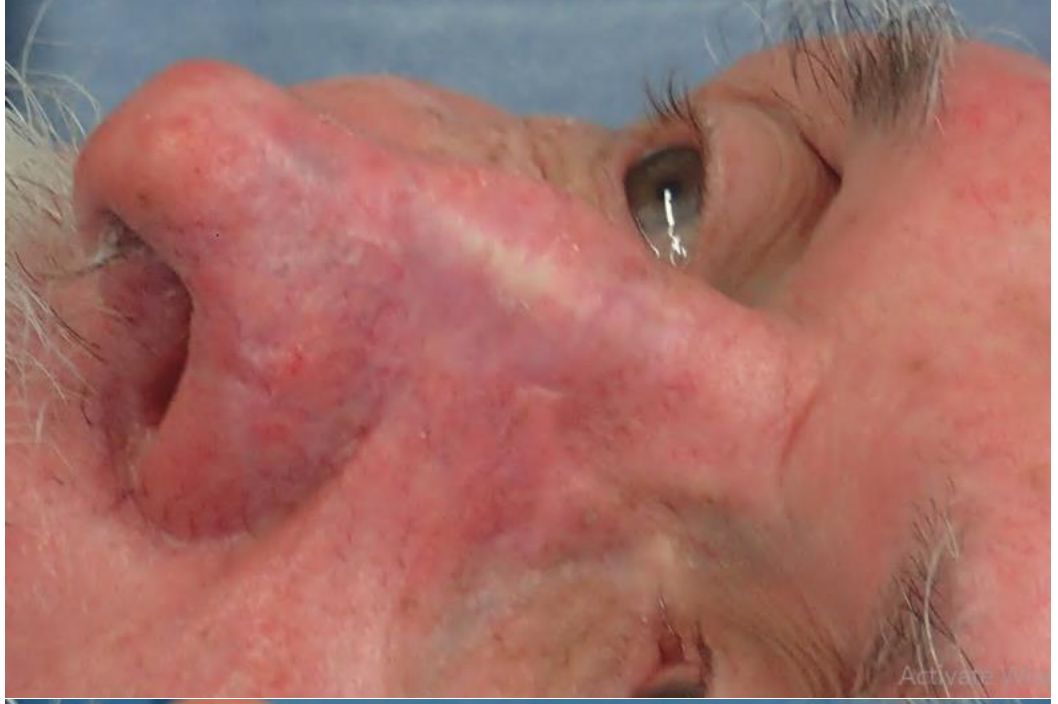
The lesion is a basal cell carcinoma of morphoeic type invading the dermis to a depth of 4.5mm. Tumour involves the deep margin and one peripheral margin. There is no evidence of perineural infiltration.

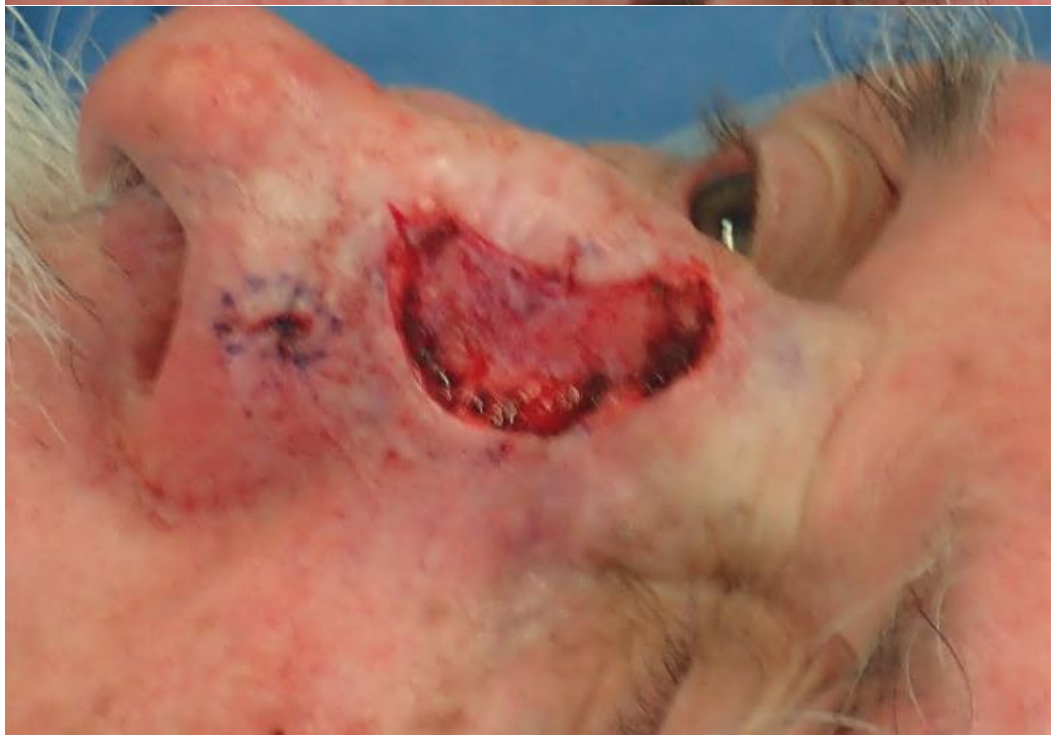
DIAGNOSIS:

SKIN, LEFT NOSE - BASAL CELL CARCINOMA INVOLVING MARGINS

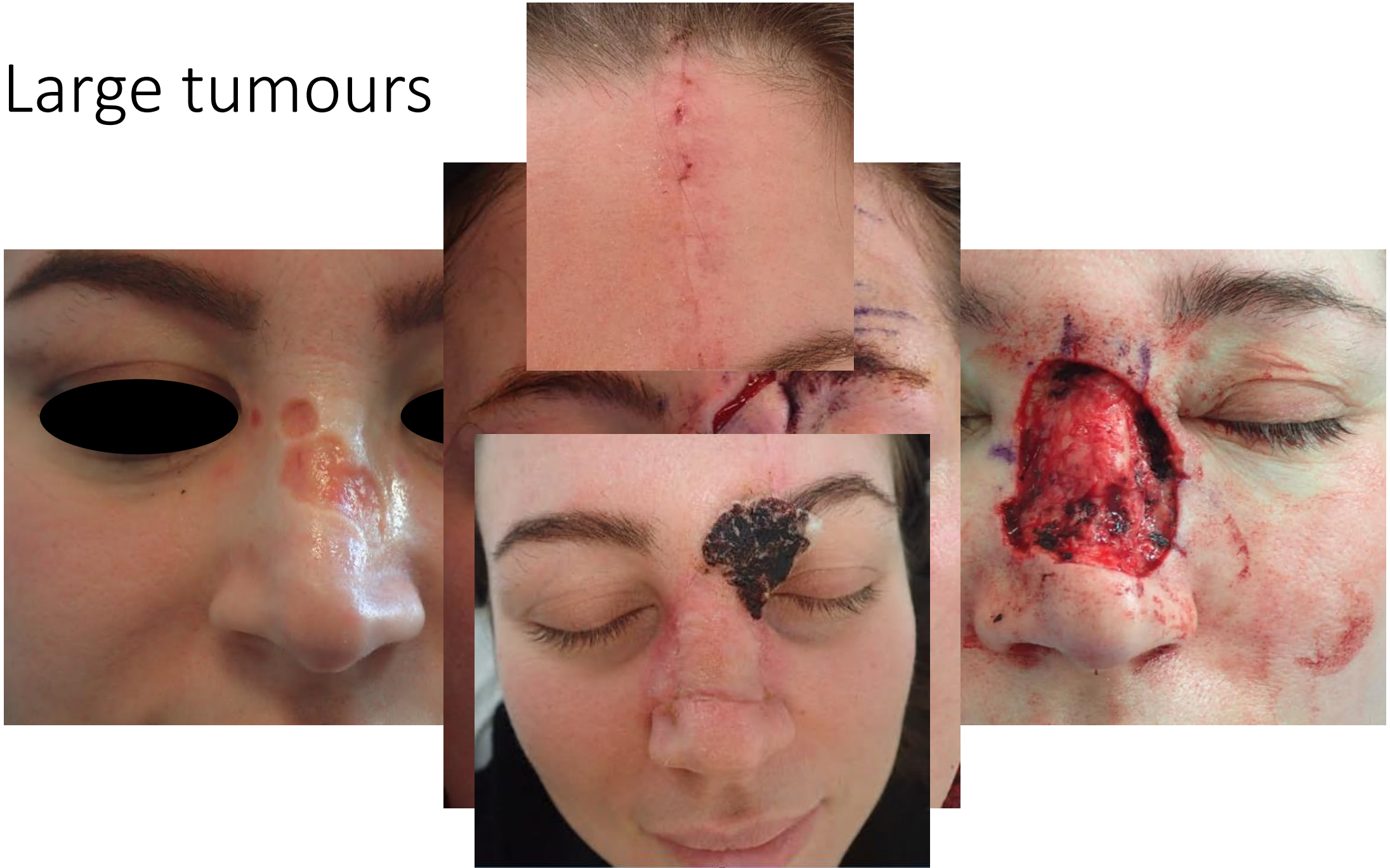
Recurrent Tumours



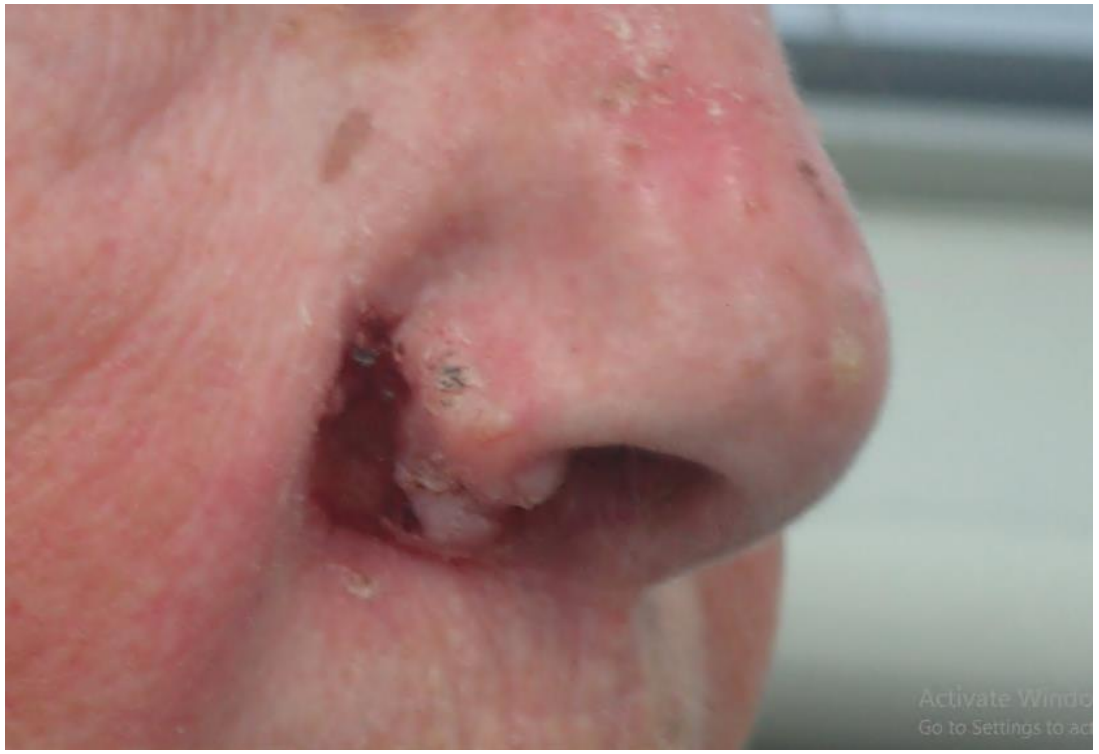


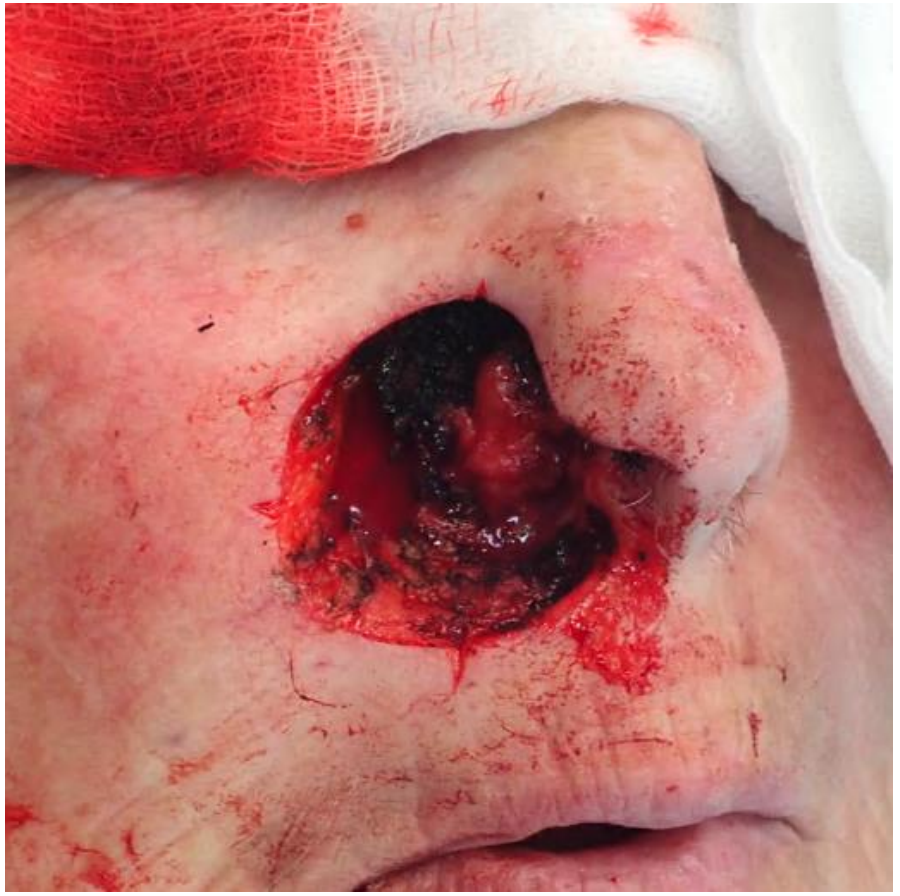


Large tumours

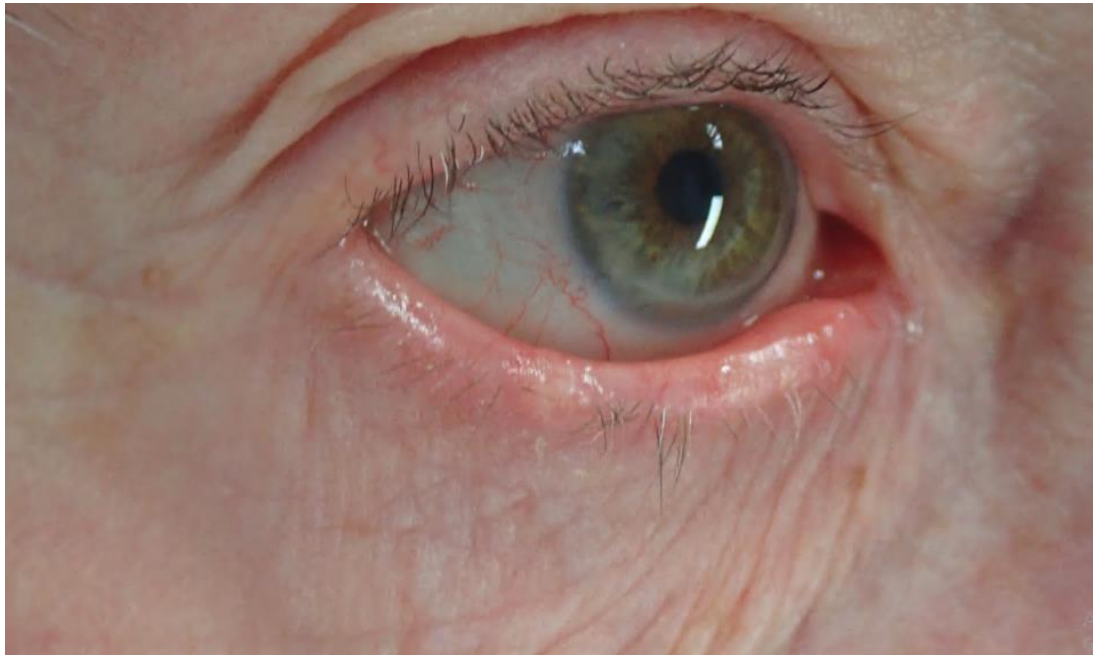


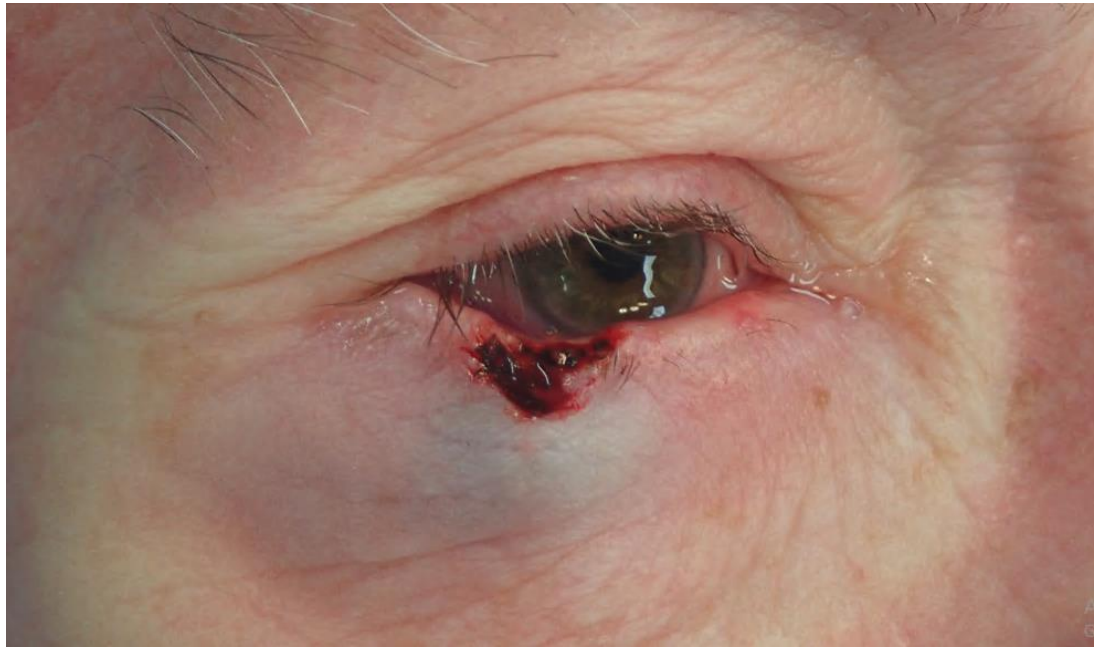
Large tumours



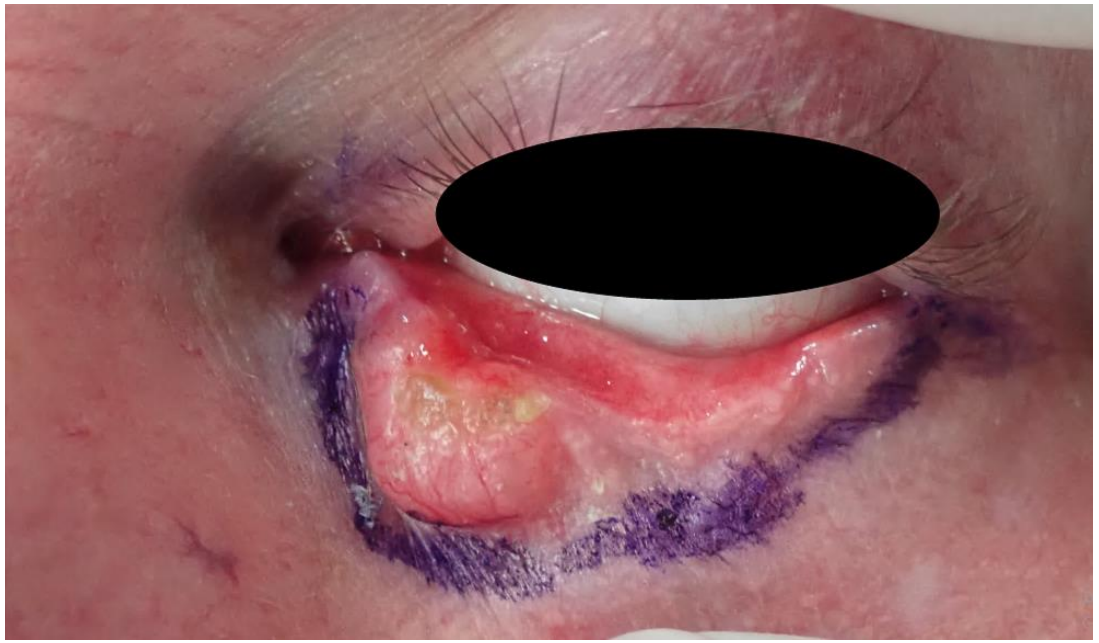


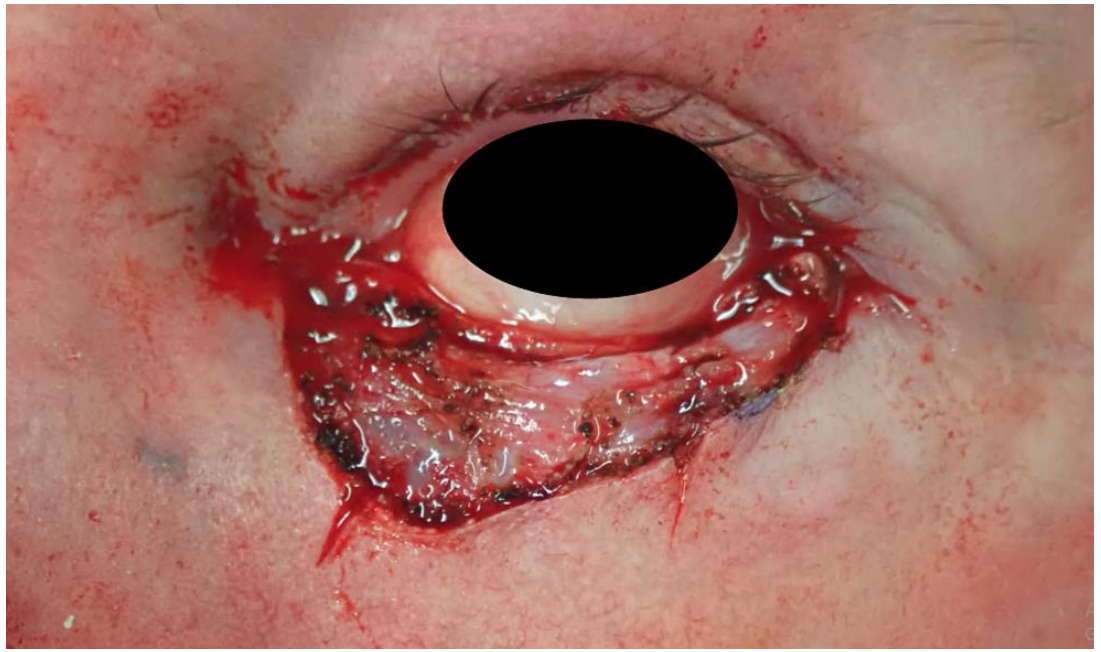
Lower eyelid



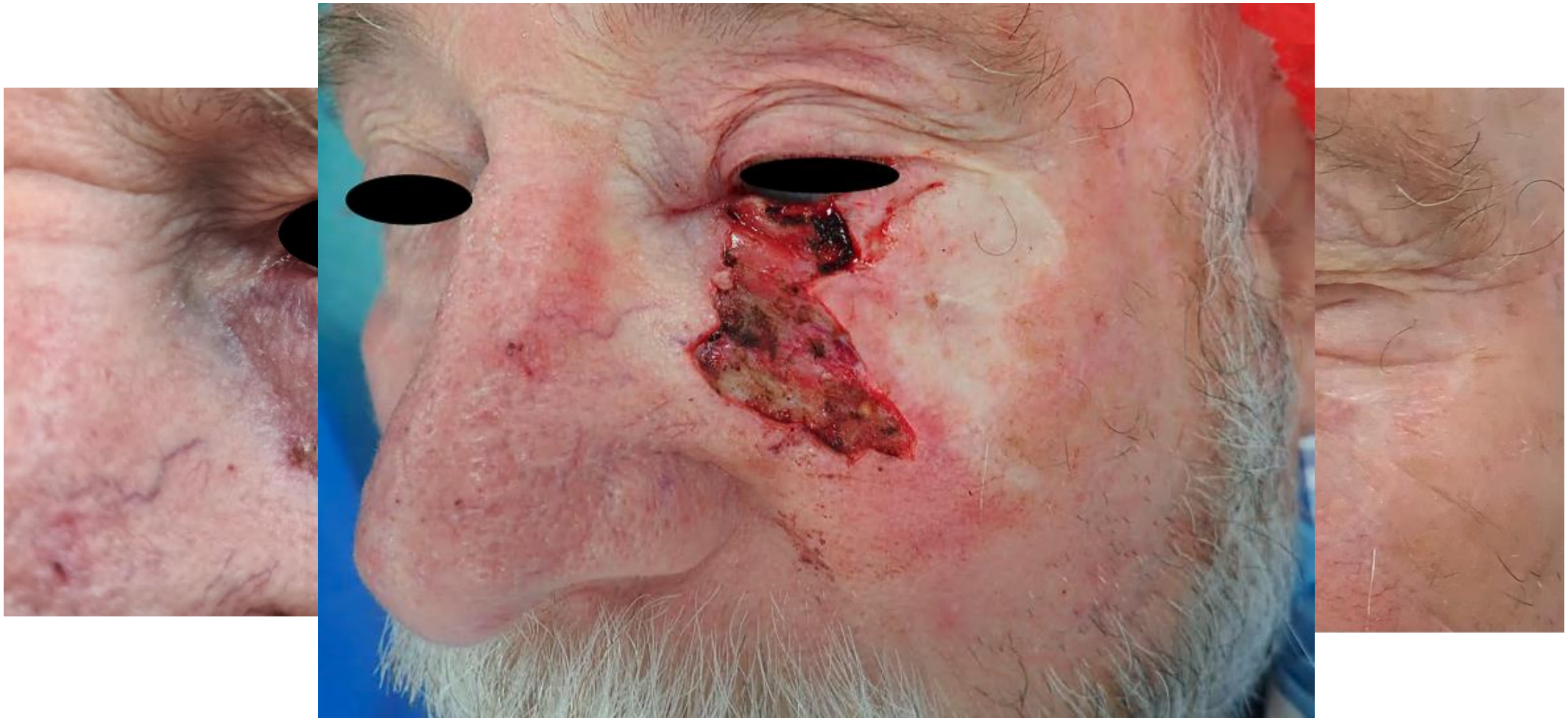


Lower eyelid

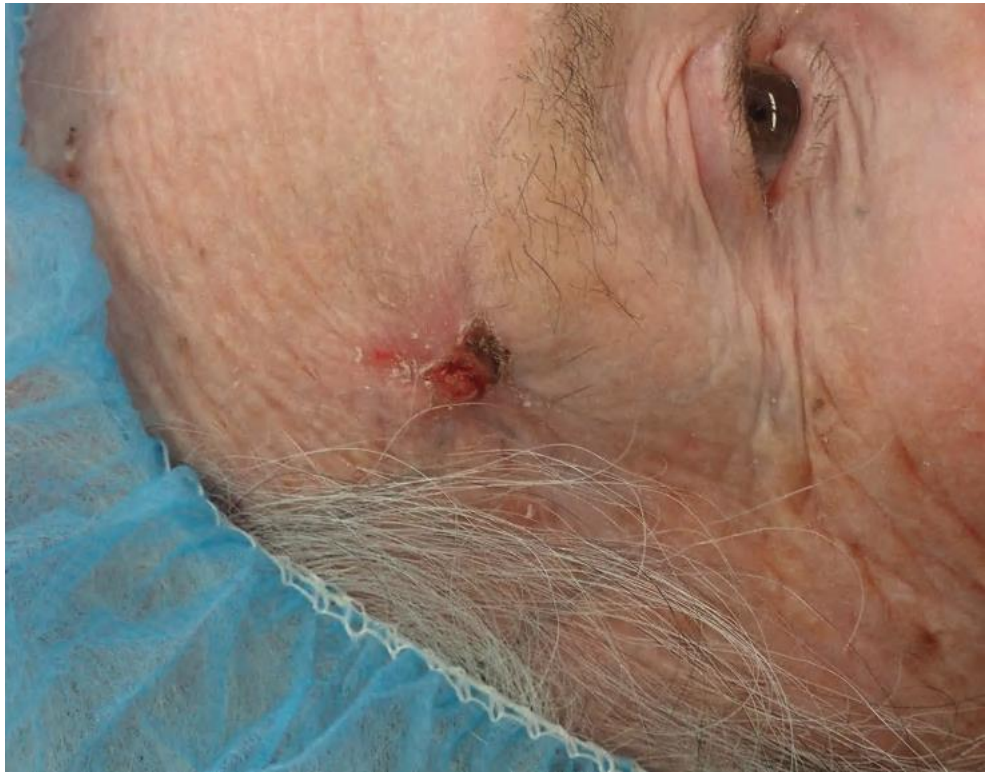


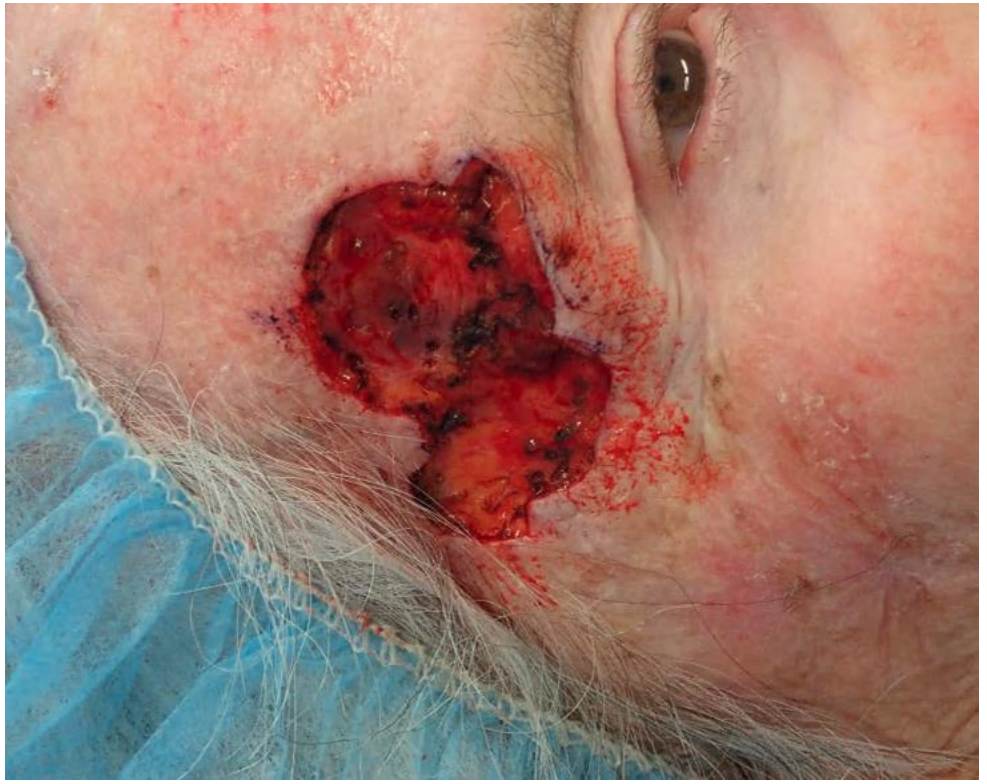


Lower eyelid

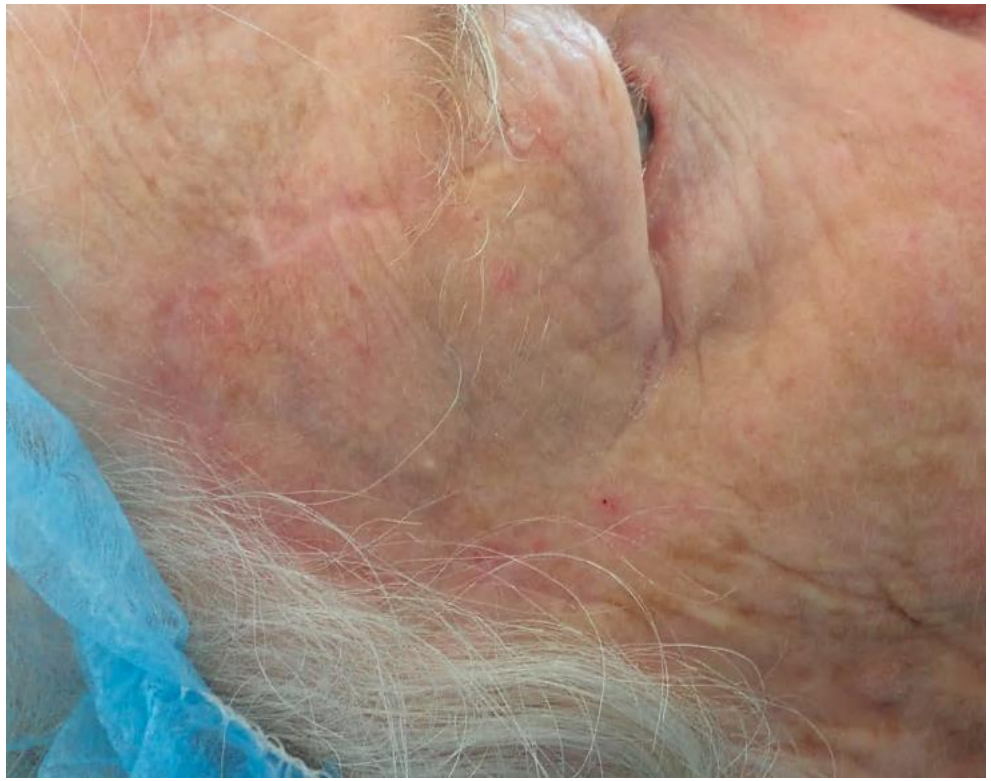


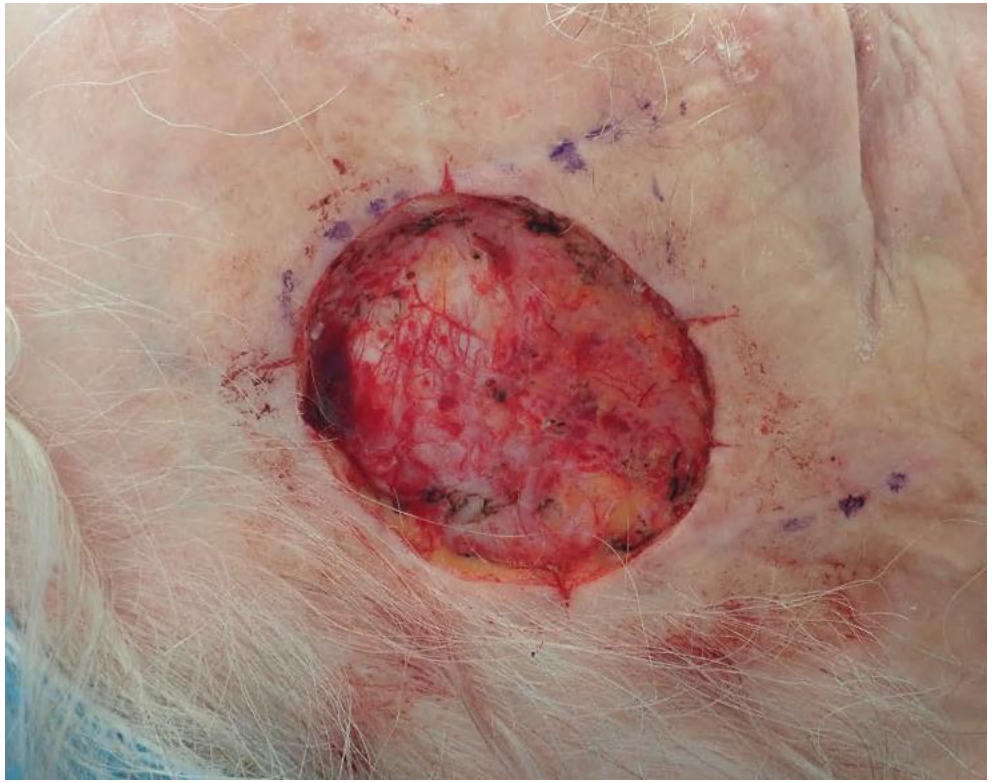
Temple



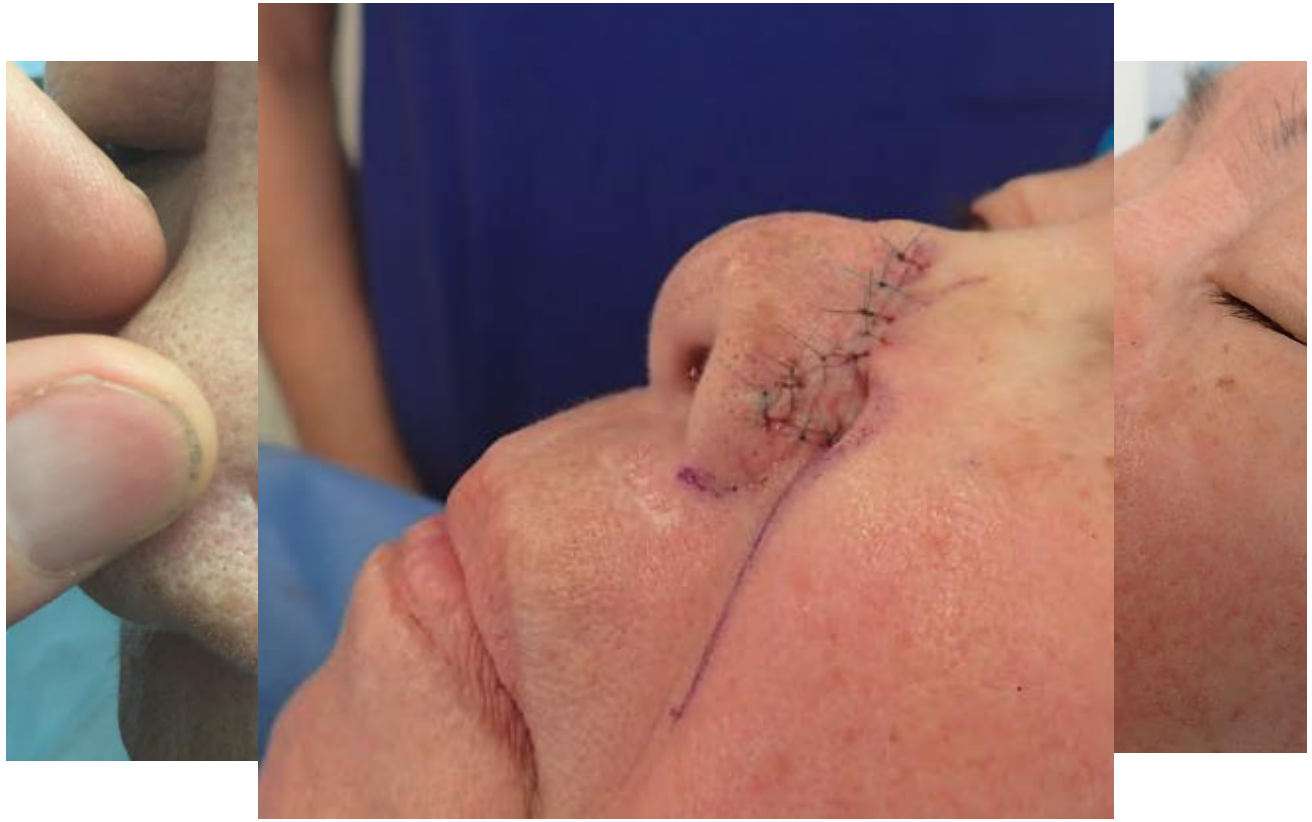


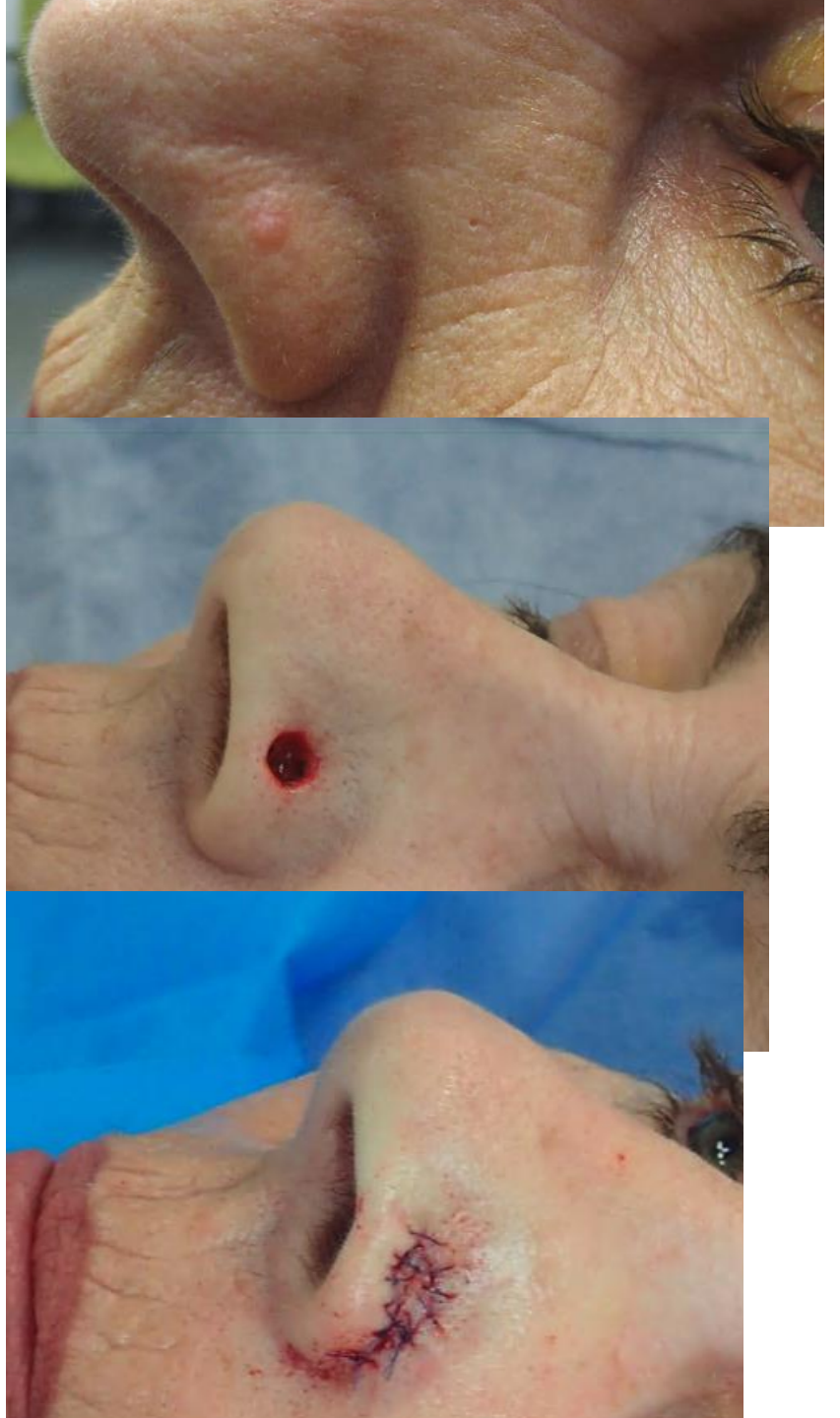
Temple



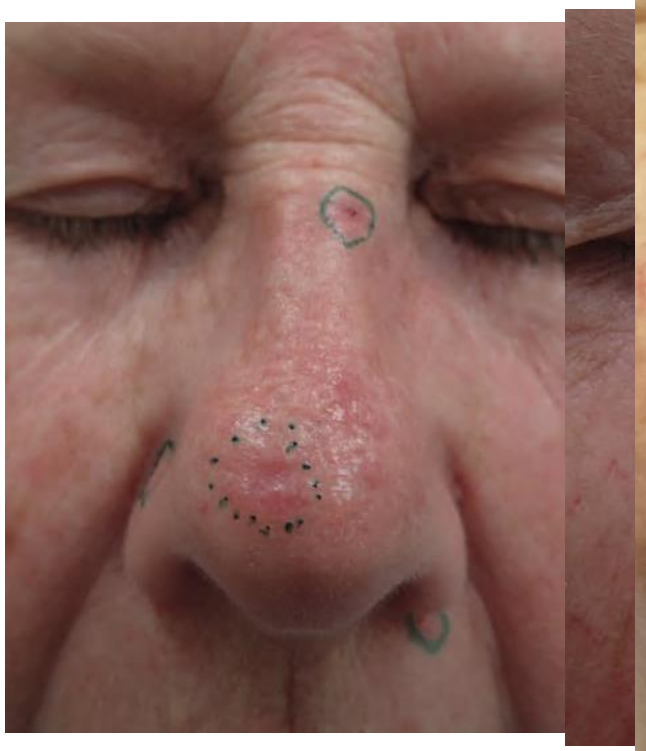


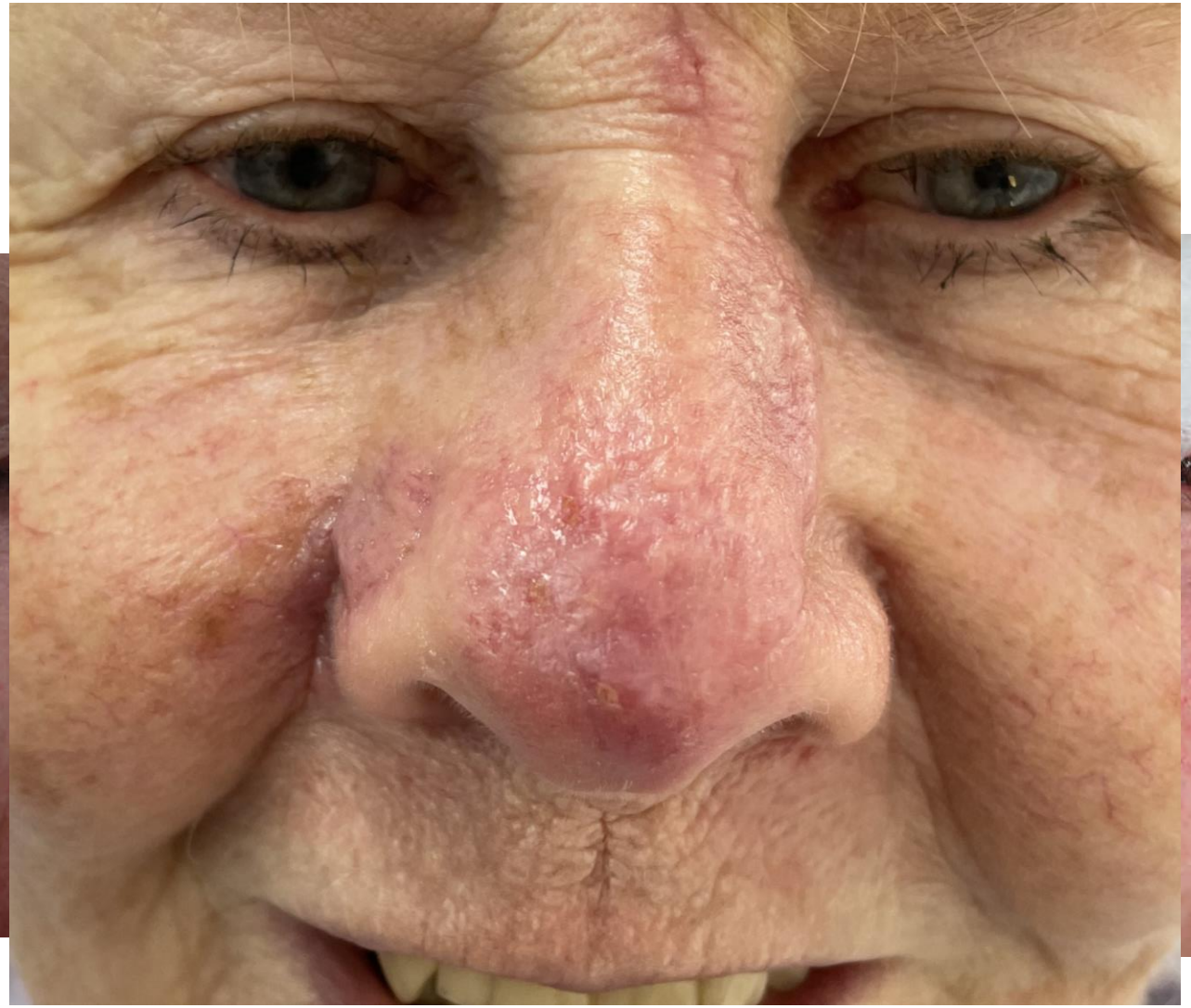
Complex areas eg nose

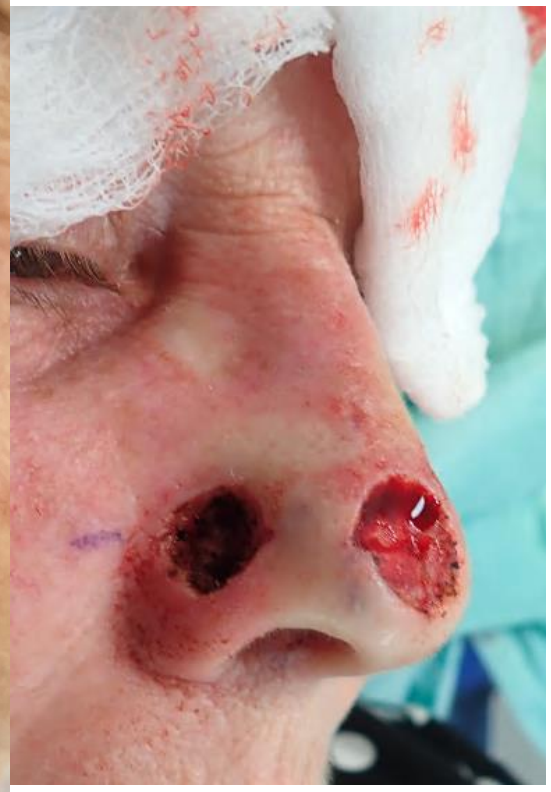




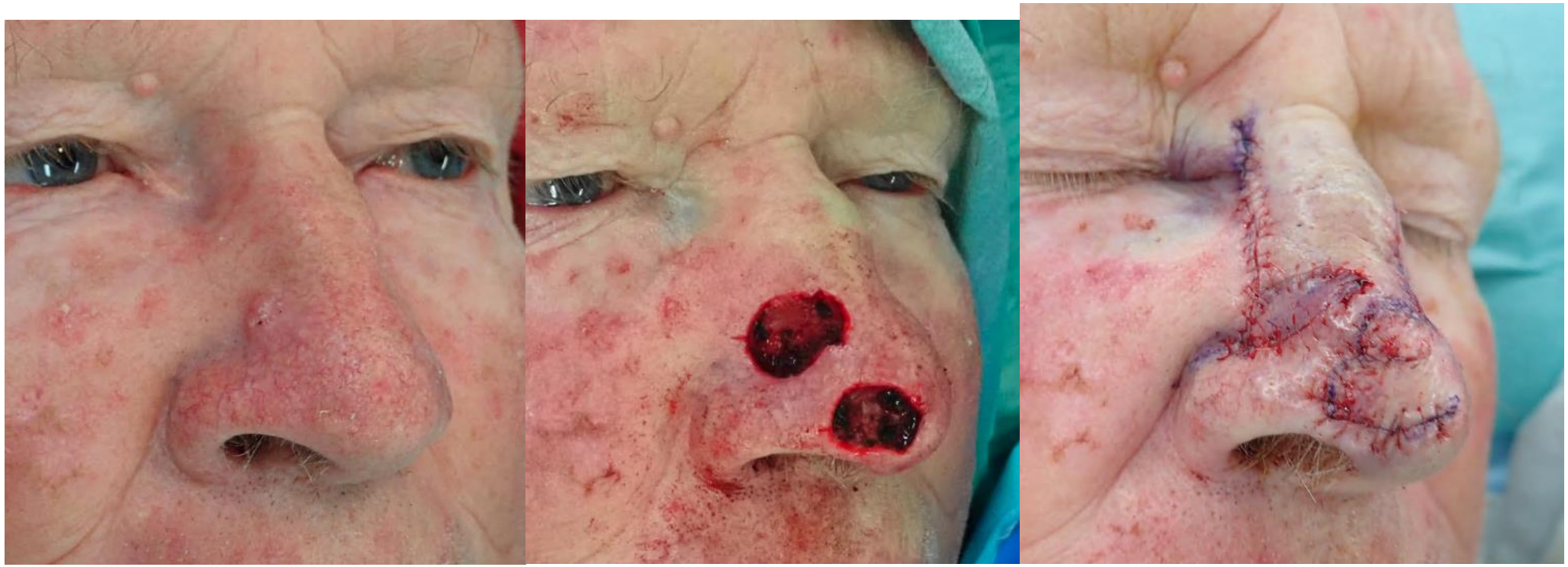
Nose



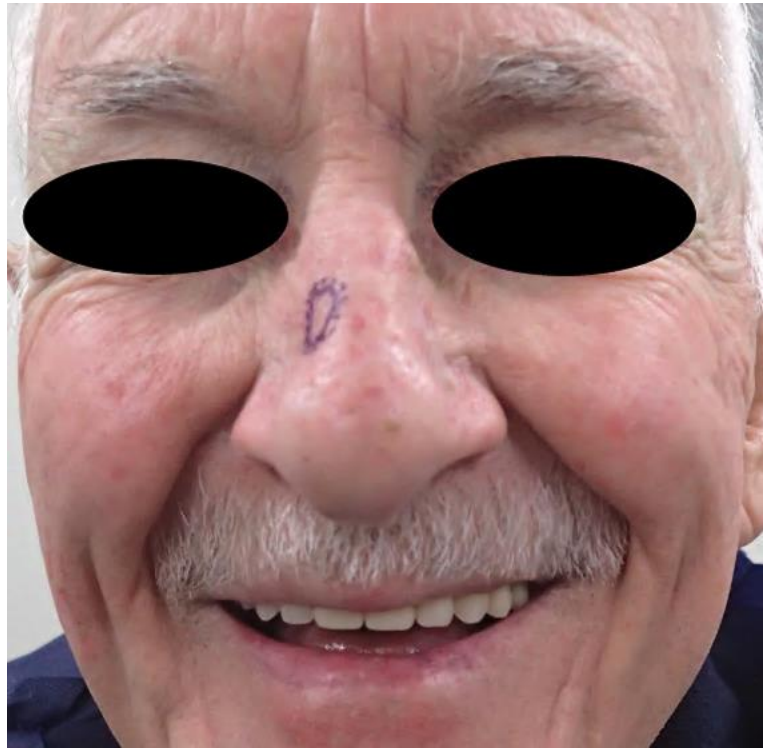


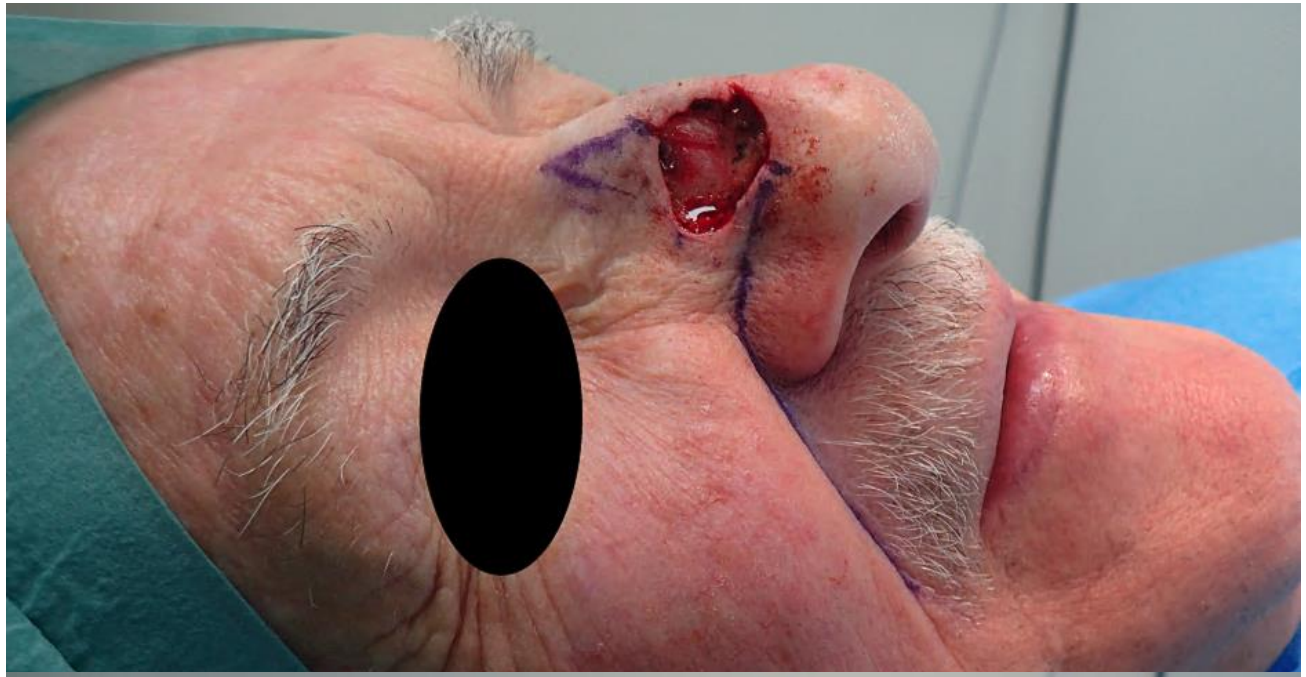


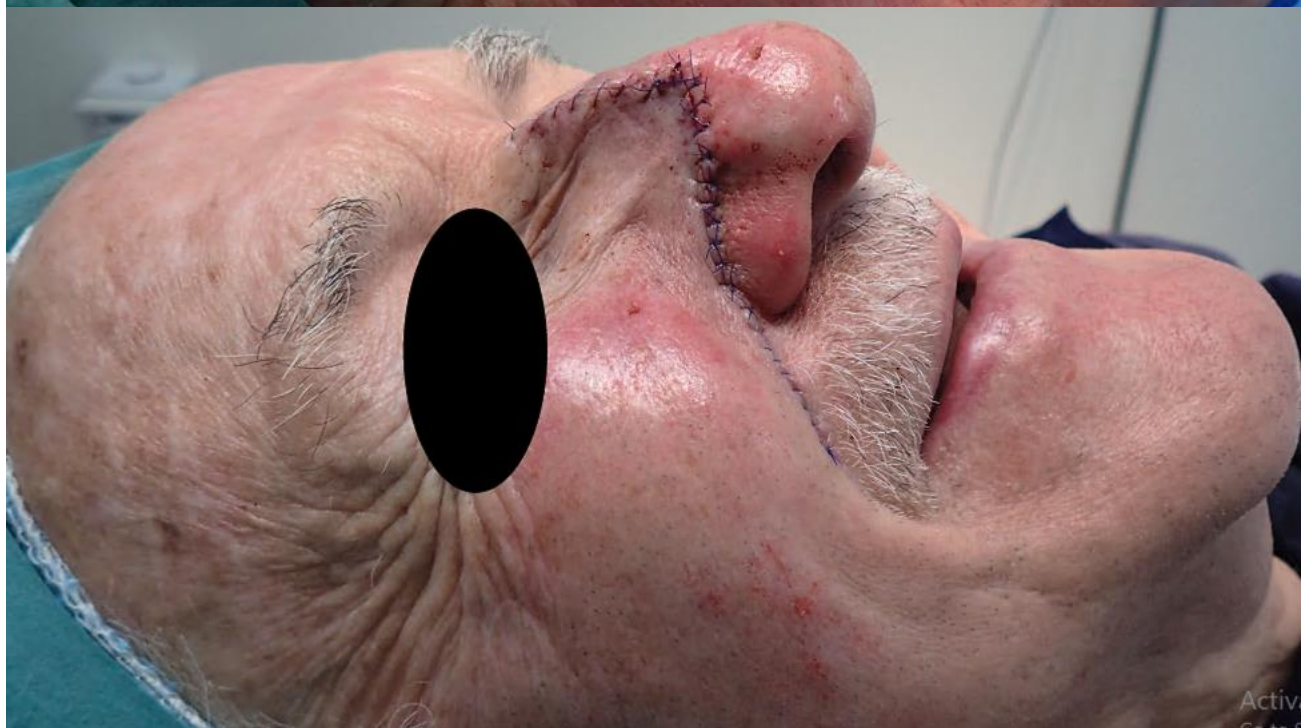
Nose



Collision tumours
SCC with 3 BCCs







Patient Journey

PREOP

- Consultation
- Photos
- Biopsy required – please provide copy of results
- Discussion about surgery, closure options, consent
- Blood thinners
- Presence of a pacemaker or defibrillator
- History of poor scarring
- Allergies
- General medical history

INTRA-OP

- Admission on arrival, first cut, wound dressing
- Tissue processing
- Slide review
- Second cut, Third cut etc
- Repeat above
- Close the wound

- Patients are told they may spend all day at the surgery. They should bring a book or some entertainment. We will provide light meals, snacks and drinks.

POSTOP

- Wound care
- Keep dry 48 hours
- Specific instructions regarding wound care provided
- Icepacks for up to 48 hours
- Analgesia to commence at discharge
- Wound cleaning and dressing
- Removal of stitches at 7, 10, 14 days or longer
- No sports/ strenuous activities for at least 1 week

Local recurrence rates following Mohs micrographic surgery compared with standard excision

Skin cancer	Mohs micrographic surgery (MMS)	Wide excision	Follow-up period
Basal cell carcinoma[1-3]	1.4 to 4.4% 2.4 to 6.7%*	4.1 to 12.2% 13.5%*	5 to 10 years
Squamous cell carcinoma[4,5]	1.2 to 2.6%¶ 5.9%¶Δ	5.7 to 8.1% (literature review rate)[6]	3.9 years (mean)
Dermatofibrosarcoma protuberans[7,8]	0 to 6.6%◇	13.2%	4.8 to 5.4 years
Atypical fibroxanthoma[9,10]	0	8.7 to 12§%	4.5 to 8.7 years (median)
Extramammary Paget disease[11,12]	8¥ to 18.2%	22¥ to 36.4%	62.7 months (mean)
Sebaceous carcinoma[13,14]	11.1 to 12ǂ%	30%	37 months (mean)
Microcystic adnexal carcinoma[15,16]	0† to 5%	50%	5 years; only 13 cases

* Recurrent facial tumors.

¶ 5 years.

Δ Recurrent tumor.

◇ Based on a literature review.

§ 73.6 m.

¥ 24 m for MMS and 65 m for excision.

ǂ 3.1 years (literature review rate).

† Mean.

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- 0403068106

Websites

- Cancer.org.au – for patients
- https://wiki.cancer.org.au/australia/Guidelines - for clinicians
- https://www.cancer.org.au/assets/pdf/basal-cell-carcinoma-or-squamous-cell-carcinoma-keratinocyte-cancer-quick-reference-guide
- https://www.cancer.org.au/assets/pdf/basal-and-squamous-cell-carcinoma-english
- Clinical practice guidelines available for download