

SURGICAL MANAGEMENT OF PRIMARY MELANOMA

IN THE ERA OF ADJUVANT TREATMENT

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DISCLOSURES

- WAKMAS member surgeon
- My wife is a GP

OUTLINE

- Biopsy for melanoma
- Staging
- Surgical management for Primary melanoma
 - Primary site
 - SLNBx
- Example case

Questions??

THE BIOPSY

- A **Critical** step in melanoma management
 - Diagnostic
 - Underpins further care
- **Excision Biopsy** is the standard
- Alternatives – Incisional, Punch, Shave
- **Why am I Not performing an excision biopsy?**

WHAT DO WE WANT FROM THE BIOPSY?

- Tissue Diagnosis
- Microstaging / Synoptic report for Melanoma
 - BT
 - Ulceration
 - Subtype
 - Margins
 - Microsatellites
 - Regression
 - Mitotic rate / LVI / TILs / Desmoplasia...
- **The Foundations Upon which Melanoma Treatment is Built**

Clinical:

Scalp vertex. Melanoma on shave biopsy - discussed at WAKMAS.
?Primary nodular vs metastasis vs primary dermal. Clinically enlarging.

Macroscopic:

An ovoid piece of skin measuring 16 x 14mm with underlying tissue to a depth of 9mm. The skin bears central elevated pigmented lesion measuring 7 x 6mm. There is a single suture in the specimen lying within the lesion. Surgical margin has been inked black. The lesion lies 1mm from the nearest surgical margin. Entire specimen submitted. (6p/3b/nr)

Microscopic:

These sections of skin show a primary invasive malignant melanoma. A synoptic summary follows:



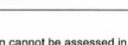

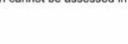

Site: Scalp

Melanoma subtype: Please see comment

Breslow thickness: 6.6 mm

Clark level of invasion: 5

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Accredited for compliance with NPAAAC standards and ISO 15189.   Page 1 of 2
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PathWest		RESULTS & ENQUIRIES	PathWest Laboratory Medicine WA	
		13 PATH (7284)	Locked Bag 2009 Nedlands WA 6909	
Requestor:	OWEN, ROBERT	Patient:		
Consultant:	OWEN, ROBERT	Sex:		
Order/Case:	OWEN, ROBERT	UMRN:		
Clinic:	PROC 1	IHI:		
Ext. Ref:		Ext MRN:		
Registered:	04/10/2021			

Ulceration: Previous shave biopsy at the site therefore ulceration cannot be assessed in the specimen (please correlate with previous shave biopsy)

Mitotic rate: 4/mm²

Satellite Metastases: Not seen

Tumour stage (AJCC 8th edition, 2017): pT4 (ulceration unable to be assessed)

Tumour infiltration by lymphocytes: Mild

Intermediate/late regression: Not seen

Lymphovascular invasion: Not seen

Perineural invasion: Not seen

Desmoplastic melanoma component: Not seen

Associated melanocytic lesion: Not seen

Margins:

- Distance from the invasive component to the nearest peripheral margin: 2.6 mm

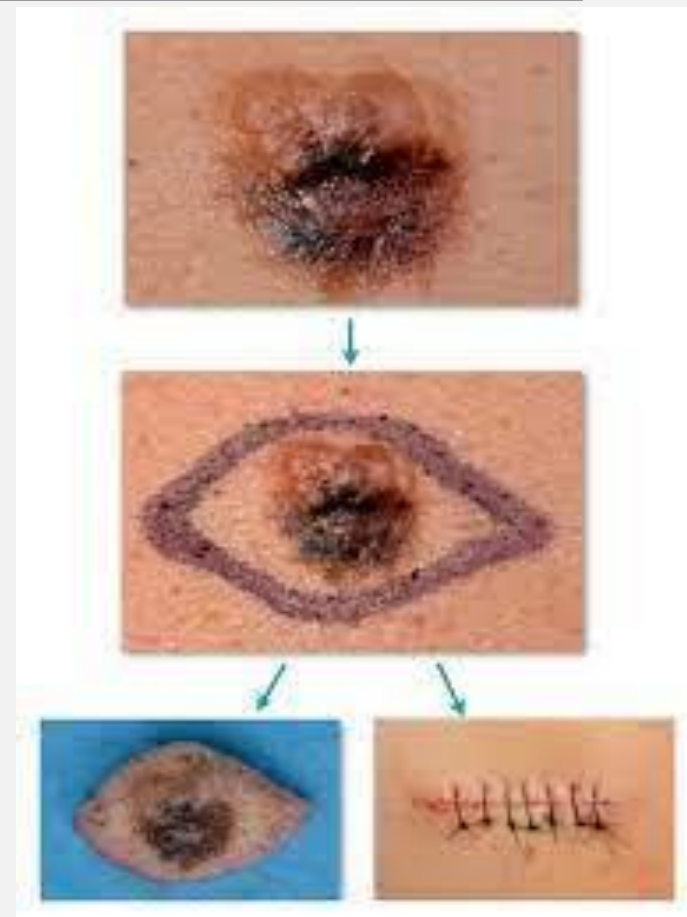
- Distance from the invasive component to the nearest deep margin: 1.6 mm

- Distance from the in situ component to the nearest peripheral margin: n/a

Microscopic Description: Sections of skin show a nodule of tumour within the dermis and pushing into the underlying subcutis. Surface ulceration is noted and the superficial dermis shows fibrosis adjacent to the tumour, consistent with previous shave biopsy. No intraepithelial component is noted. The tumour is composed of sheets and nests of pleomorphic epithelioid to spindled cells. The cells have prominent nucleoli and show marked atypia, with multinucleate and giant forms. Mitoses of up to 4/mm² are noted, including atypical forms. There is an associated mixed inflammatory infiltrate throughout the tumour, including lymphocytes, plasma cells and neutrophils.

EXCISION BIOPSY

- 2mm margin
- Full thickness skin (just into fat)
- Consider scar length & orientation
 - Short ellipse
 - Langer's lines



EXCISION BIOPSY

Pros

- Entire lesion assessed
- Adjacent epidermis assessed
- Reliable microstaging

- Lesion is Excised (it's out!!)
- Potentially superior healing / scar

Cons

- Tools & expertise required
- Time required

INCISIONAL & PUNCH BIOPSY



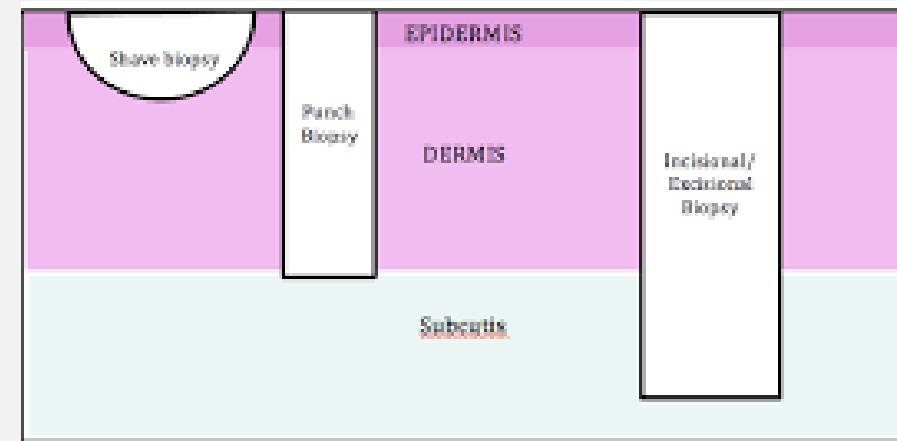
- Both **partially sample** the lesion radially
- Typically into fat
- Performed of the most suspicious part of the lesion
- Potential diagnostic inaccuracy
- Lesion still present (malignant or atypical)
- Usually easier to perform than excision
- **Useful for large lesions & difficult areas**

SHAVE BIOPSY



- Never an optimal choice
- True BT rarely assessable
- Margins often involved
- Can be longer to heal (saucerisation)
- Fast
- Limited resources needed

- **Better than No Biopsy at all**



BIOPSY WOUND CLOSURE

- **Keep it simple**
 - Short ellipse
 - Direct closure
 - Approximate wound



Forget 3:1 Ratio Teaching!

- Revise any suboptimal aesthetics once histology known

Stage and Category	Stage	Classification
T stage	T1	Breslow \leq 1 mm; ulceration not known
	T1a	Breslow \leq 0.8 mm; ulceration absent
	T1b	Breslow \leq 0.8 mm
	T2	Breslow 1.1-2.0 mm; ulceration not known
	T2a	Breslow 1.1-2.0 mm; ulceration absent
	T2b	Breslow 1.1-2.0 mm; ulceration present
	T3	Breslow 2.1-4.0 mm; ulceration not known
	T3a	Breslow 2.1-4.0 mm; ulceration absent
	T3b	Breslow 2.1-4.0 mm; ulceration present
	T4	Breslow $>$ 4.0 mm; ulceration not known
T4a	Breslow $>$ 4.0 mm; ulceration present	
T4b	Breslow $>$ 4.0 mm; ulceration present	
T0	Melanoma of unknown primary	
TX	Breslow thickness not known	
N stage	N1a	1 node, clinically occult, no MSI
	N1b	1 node, clinically detected, no MSI
	N1c	0 nodes, MSI present
	N2a	2-3 nodes, clinically occult, no MSI
	N2b	2-3 nodes, clinically detected, no MSI
	N2c	1 node, clinically occult or detected, MSI present
	N3a	\geq 3 nodes, clinically occult, no MSI
N3b	\geq 3 nodes, clinically detected, no MSI	
N3c	$>$ 1 nodes, clinically occult or detected, MSI present	
Overall stage	III	T1, T2, T3, T4, TX, and any N stage
	IIIA	T1a-b, T2a and N1a, N2a
	IIIB	T0 and N1b, N1c
	IIIC	T1a-b, T2a and N1b, N1c, N2b, T2b, T3a and N3a-c, N2a, N2b, T0 and N2b, N2c, N3b, N3c
IIID	T3b, T4a, and any N stage T4b and N1a-c, N2a-c T4b and N3a-c	

MELANOMA STAGING

AJCC 8th Editon
 TNM
 a or b
 Stage I II III IV
 ABCD
 Graphs / tables / figures of prognosis
 Imaging studies for some



EASY TO GET VERY CONFUSED!

AJCC Melanoma of the Skin Staging 8th Edition

Definitions

Primary Tumor (T)

TX Primary tumor cannot be assessed (for example, curettaged or severely regressed melanoma)

T0 No evidence of primary tumor

Tis Melanoma in situ

T1 Melanomas 1.0 mm or less in thickness

T2 Melanomas 1.1-2.0 mm

T3 Melanomas 2.1-4.0 mm

T4 Melanomas more than 4.0 mm

NOTE: a and b subcategories of T are assigned based on ulceration and thickness as shown below.

T CLASSIFICATION	THICKNESS (mm)	ULCERATION STATUS
T1	\leq 1.0	a: Breslow $<$ 0.8 mm w/o ulceration b: Breslow 0.8-1.0 mm w/o ulceration or \leq 1.0 mm w/ ulceration.
T2	1.1-2.0	a: w/o ulceration b: w/ ulceration
T3	2.1-4.0	a: w/o ulceration b: w/ ulceration
T4	$>$ 4.0	a: w/o ulceration b: w/ ulceration

Regional Lymph Nodes (N)

NX Patients in whom the regional lymph nodes cannot be assessed (for example, preoperative or for another purpose)

N0 No regional metastases based on pathologic evaluation of regional lymph nodes, number of palpable nodes, and presence or absence of melanoma

NOTE: N1-3 and a-c subcategories are assigned based on the number of nodes, clinical detection, and presence of melanoma.

N CLASSIFICATION	# NODES	CLINICAL DETECTION	MSI STATUS
N1	0-1 node	a: clinically occult b: clinically detected c: 0 nodes, MSI present ²	
N2	1-3 nodes	a: 2-3 nodes clinically occult ¹ , no MSI ² b: 2-3 nodes clinically detected ¹ , no MSI ² c: 1 node clinical or occult ¹ , MSI present ²	
N3	$>$ 1 nodes	a: $>$ 3 nodes, all clinically occult ¹ , no MSI ² b: $>$ 3 nodes, \geq 1 clinically detected ¹ or matted, no MSI ² c: $>$ 1 nodes clinical or occult ¹ , MSI present ²	

Distant Metastasis (M)

M0 No detectable evidence of distant metastases

M1a Metastases to skin, subcutaneous, or distant lymph nodes

M1b Metastases to lung

M1c Metastases to all other visceral sites

M1d Metastases to brain

NOTE: Serum LDH is incorporated into the M category as shown below.

M CLASSIFICATION	SITE
M1a-d	Skin/subcutaneous/node (a), lung (b) other visceral (c), brain (d)
M1a-d(0)	Skin/subcutaneous/node (a), lung (b) other visceral (c), brain (d)
M1a-d(1)	Skin/subcutaneous/node (a), lung (b) other visceral (c), brain (d)

ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage	Clinical Staging ¹			Pathologic Staging ¹		
	Tis	N0	M0	Tis	N0	M0
Stage 0	...	...	...	...	...	...
Stage IA	T1a	N0	M0	IA	T1a	N0 M0
Stage IB	T1b	...	...	IB	T1b	...
Stage IIA	T2a	N0	M0	IIA	T2a	M0 M0
Stage IIB	T2b	...	...	IIB	T2b	...
Stage IIC	T3a	...	...	IIC	T3a	...
Stage III	Any T	\geq N1	M0	IIIA	T1-2a	N1a M0
				IIIB	T1-2a	N2a
					T0	N1b-c M0
					T1-2a	N1b-c
					T1-2a	N2b
					T2b-3a	N1a-2b
				IIC	T0	N2b-c M0
					T0	N3b-c
					T1a-3a	N2c-3c
					T3b-4a	Any N
					T4b	N1a-2c
				IIID	T4b	N3a-c M0
Stage IV	Any N	Any N	M1	IV	Any T	Any N M1

AJCC Eighth Edition Melanoma Stage III Subgroups

N Category	T Category								
	T0	T1a	T1b	T2a	T2b	T3a	T3b	T4a	T4b
N1a	N/A	A	A	A	B	B	C	C	C
N1b	B	B	B	B	B	B	C	C	C
N1c	B	B	B	B	B	B	C	C	C
N2a	N/A	A	A	A	B	B	C	C	C
N2b	C	B	B	B	B	B	C	C	C
N2c	C	C	C	C	C	C	C	C	C
N3a	N/A	C	C	C	C	C	C	C	D
N3b	C	C	C	C	C	C	C	C	D
N3c	C	C	C	C	C	C	C	C	D

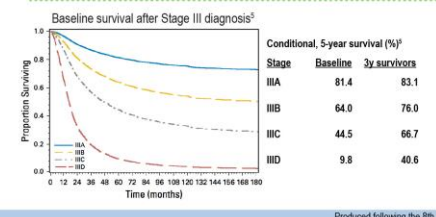
Instructions

- Select patient's N category at left chart.
- Select patient's T category at top of chart.
- Note letter at the intersection of T&N on grid.
- Determine patient's AJCC stage using legend.

Legend

A	Stage IIIA
B	Stage IIIB
C	Stage IIIC
D	Stage IIID

N/A=Not assigned



T Category	Thickness	Ulceration status
Tis (melanoma <i>in situ</i>)	Not applicable	Not applicable
T1	\leq 1.0 mm	Unknown or unspecified
T1a	$<$ 0.8 mm	Without ulceration
T1b	$<$ 0.8 mm	With ulceration
T2	$>$ 1.0-2.0 mm	Unknown or unspecified
T2a	$>$ 1.0-2.0 mm	Without ulceration
T2b	$>$ 1.0-2.0 mm	With ulceration
T3	$>$ 2.0-4.0 mm	Unknown or unspecified
T3a	$>$ 2.0-4.0 mm	Without ulceration
T3b	$>$ 2.0-4.0 mm	With ulceration
T4	$>$ 4.0 mm	Unknown or unspecified
T4a	$>$ 4.0 mm	Without ulceration
T4b	$>$ 4.0 mm	With ulceration

AN EXAMPLE CASE PATIENT X

- A 65yr Pt with suspicious changing pigmented leg lesion

- **1.4mm BT Ulcerated** primary melanoma

- No microsatellites
- MR elevated
- Regression present
- 1.5mm closest excision margin

- **T2b Nx Mx**

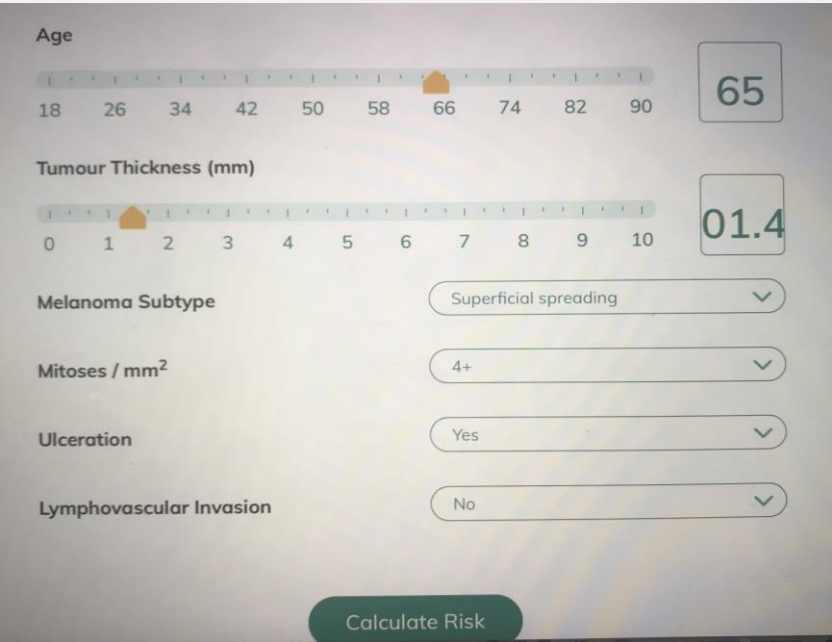
T Category	Thickness	Ulceration status
Tis (melanoma <i>in situ</i>)	Not applicable	Not applicable
T1	≤1.0 mm	Unknown or unspecified
T1a	<0.8 mm	Without ulceration
T1b	<0.8 mm	With ulceration
T2	0.8–1.0 mm	With or without ulceration
T2a	>1.0–2.0 mm	Without ulceration
T2b	>1.0–2.0 mm	With ulceration
T3	>2.0–4.0 mm	Unknown or unspecified
T3a	>2.0–4.0 mm	Without ulceration
T3b	>2.0–4.0 mm	With ulceration
T4	>4.0 mm	Unknown or unspecified
T4a	>4.0 mm	Without ulceration
T4b	>4.0 mm	With ulceration

WHERE ARE WE UPTO?

- Excision Bx - *Primary Tumour Microstaging*
 - We have the **T** info
 - We need the **N** info
- Sentinel node discussion for T1b tumours and above
 - Any melanoma with ulceration
 - Non-ulcerated melanoma 0.8mm BT and above

NOMOGRAM

- MIA – *melanomarisk.org.au*



Age: 65

Tumour Thickness (mm): 01.4

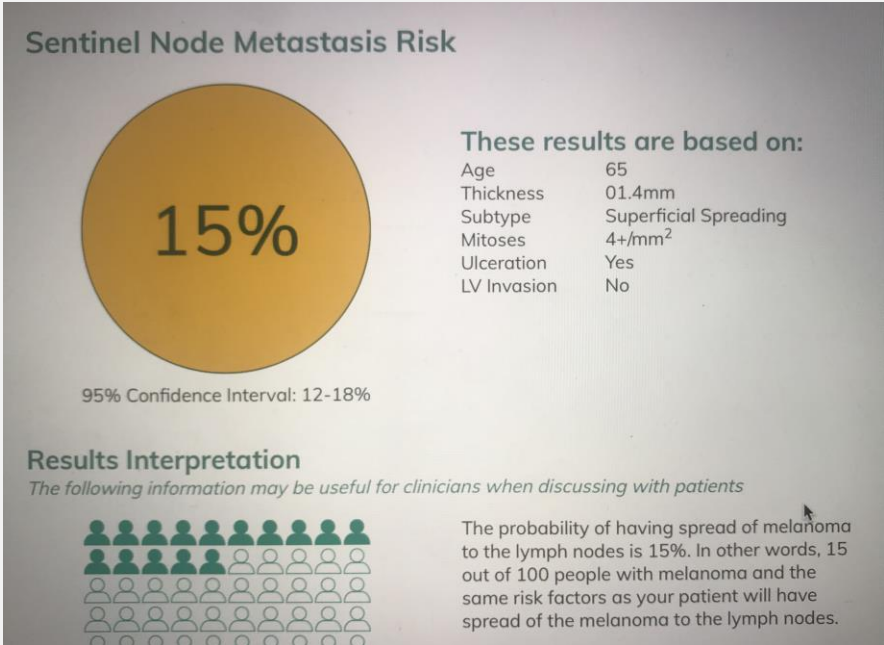
Melanoma Subtype: Superficial spreading

Mitoses / mm²: 4+

Ulceration: Yes

Lymphovascular Invasion: No

Calculate Risk



SURGERY FOR PRIMARY MELANOMA

AFTER APPROPRIATE EXCISION BIOPSY

PRIMARY SITE

- Wide Local Excision
 - Clinical Margins:
 - In situ – 5mm
 - <1mm – 1cm
 - 1-4mm – 1-2cm*
 - >4mm – consider 2cm*
- *1cm clinical margin is routine*
- Firebreak / reduce local recurrence

STAGING

- Sentinel Lymph Node Biopsy (SLNBx)
- At the time of WLE
- Microscopic evaluation of first draining node(s)
- Sensitive test for microscopic metastasis
- Some additional risks
 - PET/CT staging for >T3b primary

AN EXAMPLE CASE PATIENT X

PRIMARY SITE

- WLE
 - To deep fascia
 - 1-2cm radial margin



STAGING

- SLNBx performed
 - Lymphoscintogram Tc⁹⁹
 - Patent Blue dye
 - 'Road map for surgery'



WIDE LOCAL EXCISION

In situ – 5mm

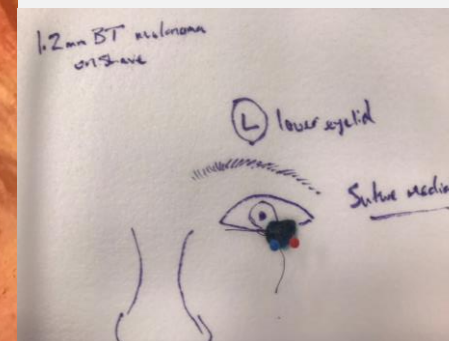
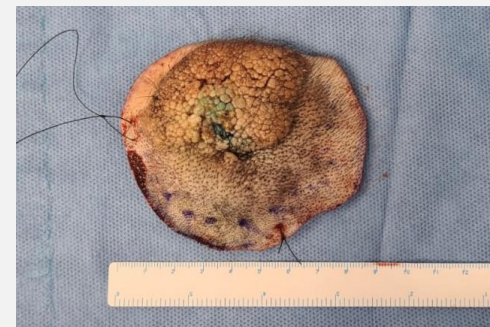
<1mm – 1cm

1-4mm – 1-2cm*

>4mm – consider 2cm*

**1cm clinical margin is routine*

To fascia or equivalent depth



SENTINEL LYMPH NODE BIOPSY

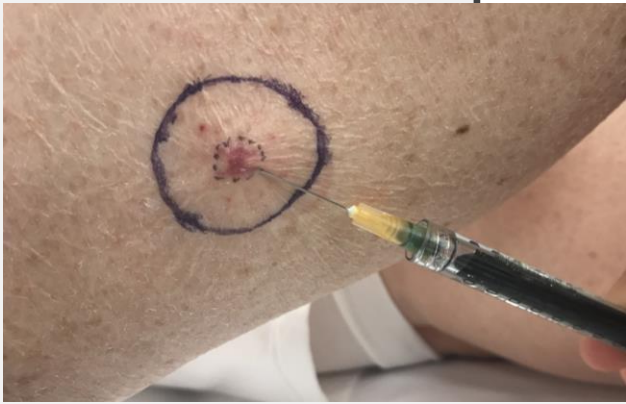
- Concurrent with WLE
- LSG day of or day prior
- General Anaesthesia
- Patent Blue / Tc⁹⁹ guided LN excision

****PIs Don't perform WLE then refer for SLNBx****

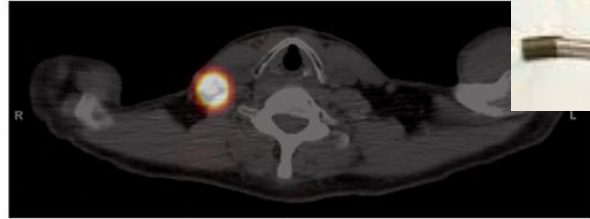
- Primarily a staging investigation in the era of adjuvant Rx
- Detect micrometastatic disease early & enable adjuvant Rx (or access trials)
- Guide nodal basin surveillance eg. Trunk

*Bleeding / Infection / Wound / Scar
Seroma / dye reaction
Site specific
Lymphoedema
Inability
False neg / pos*

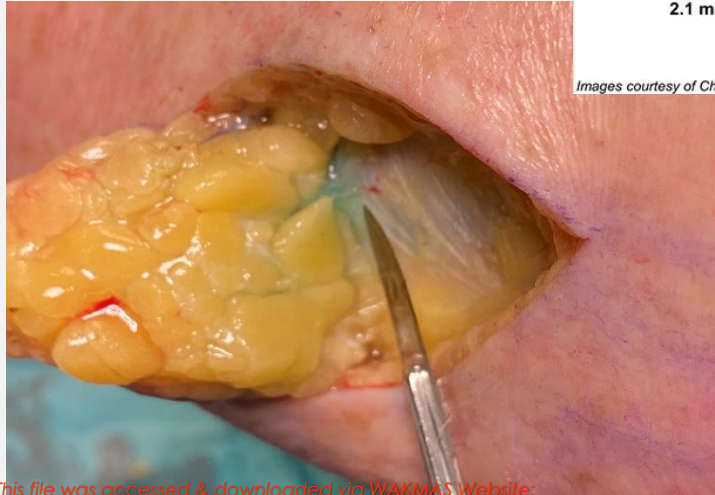
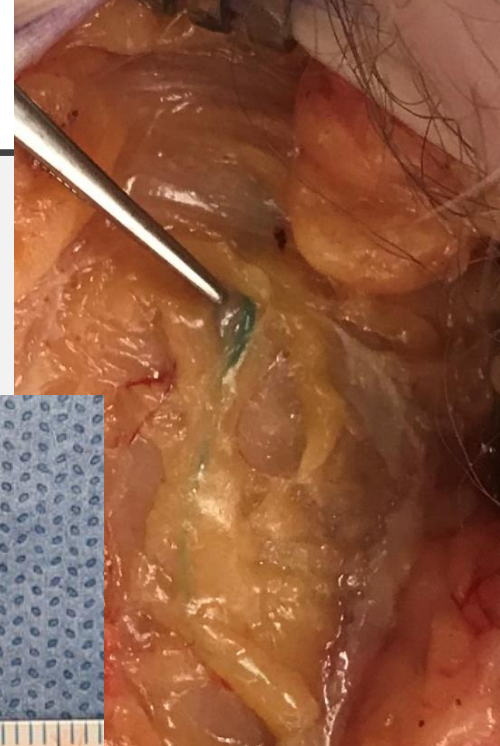
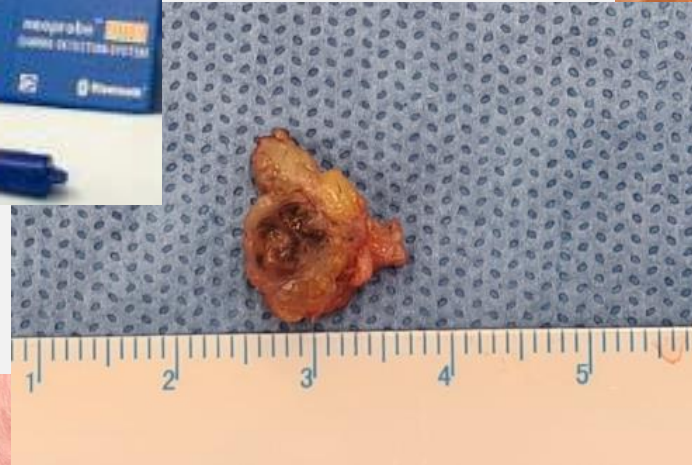
SENTINEL LYMPH NODE BIOPSY



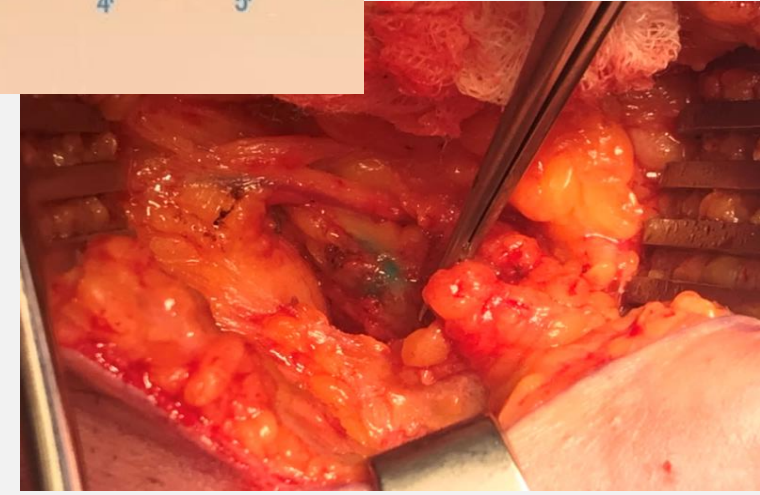
SPECT-CT Lymphoscintigraphy



3D SPECT-CT lymphoscintigraphy
2.1 mm nonulcerated melanoma right temporal scalp



Images courtesy of Christopher Puleo, PA-C and Claudia Berman



AN EXAMPLE CASE PATIENT X

WLE

- No residual tumour

SLNB_x

- Single positive node
 - Micrometastatic melanoma deposit
 - 1mm max size
 - No extracapsular spread

→ T2bN1a

What to do Next?

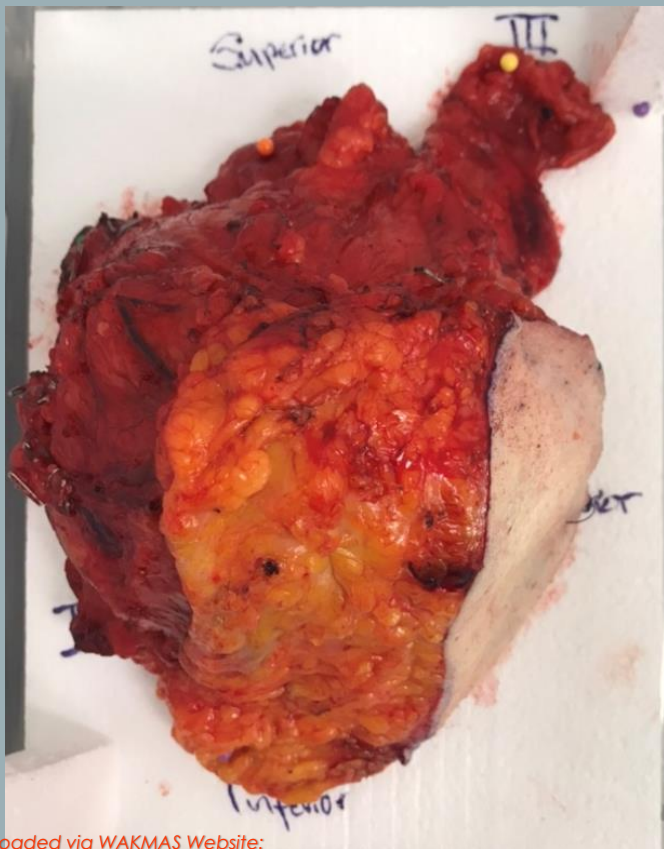
AN EXAMPLE CASE PATIENT X

- T2b N1a Mx – Stage IIIB
- PET/CT
- MDT discussion
- Systemic therapy likely
- Surgery (CLND) kept in reserve

Without SLNBx would remain Stage IIA – no adjuvant Rx

Without SLNBx would remain unaware of micrometastasis

SURGERY FOR METASTASES



- *Outside the scope of this talk*
- MDT discussion
- Requires Histo / Cytological diagnosis & Radiological staging
- Trial(s) consideration

SUMMARY

- Excision Biopsy preferred
- WAKMAS MDT
- Surgery for management of Primary Site & Staging Sentinel Node
- Sentinel Node status can alter patient care
 - Early detection of metastatic disease
 - Early institution of systemic therapy