Radical prostatectomy – Cut up and reporting at North Bristol NHS Trust

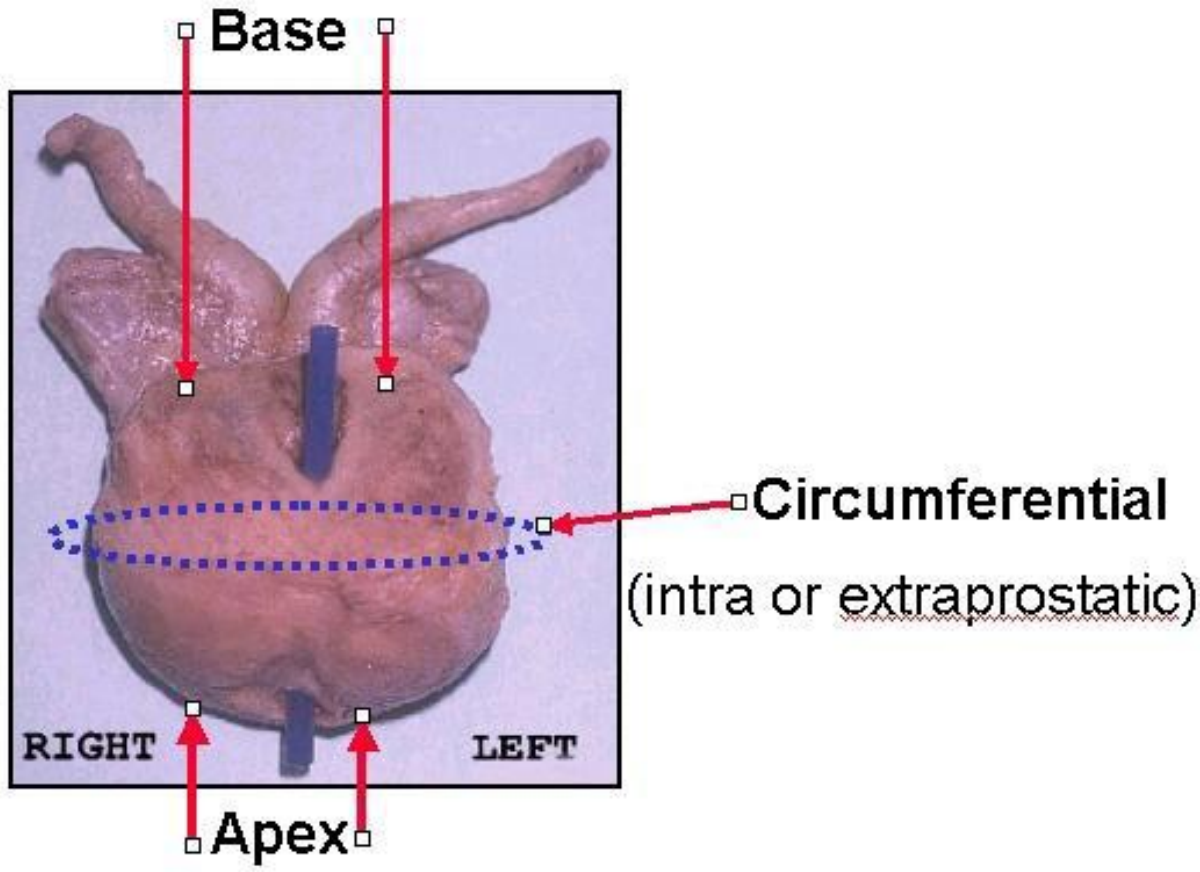
YouTube video: https://www.youtube.com/watch?v=a8o0lziSNpQ

RCPath Dataset: https://www.rcpath.org/resourceLibrary/g048-prostatedataset-jun16-pdf.html

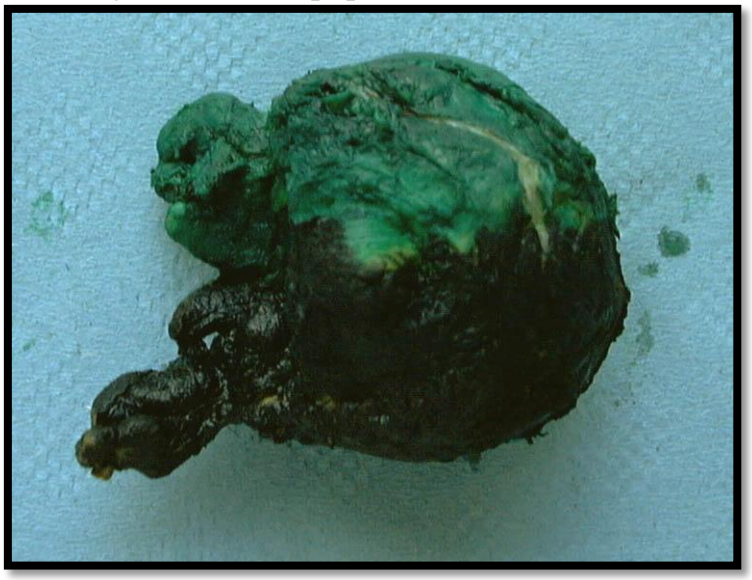
If the prostate has **Low dose brachytherapy rods** in it – **STOP** – don't cut up before speaking to the surgeon and checking that no longer radioactive (normally after 3 months from insertion)

Description:

(a) Orientate specimen by seminal vesicles, posterior and superior.
(b) Weigh (ISUP/RCPath) recommend without SV – but NBT weigh with SV as easier! If >50gms allow at least 48hrs to fix.
Measure organ and document presence and size of seminal vesicles (complete or incomplete) and vasa.



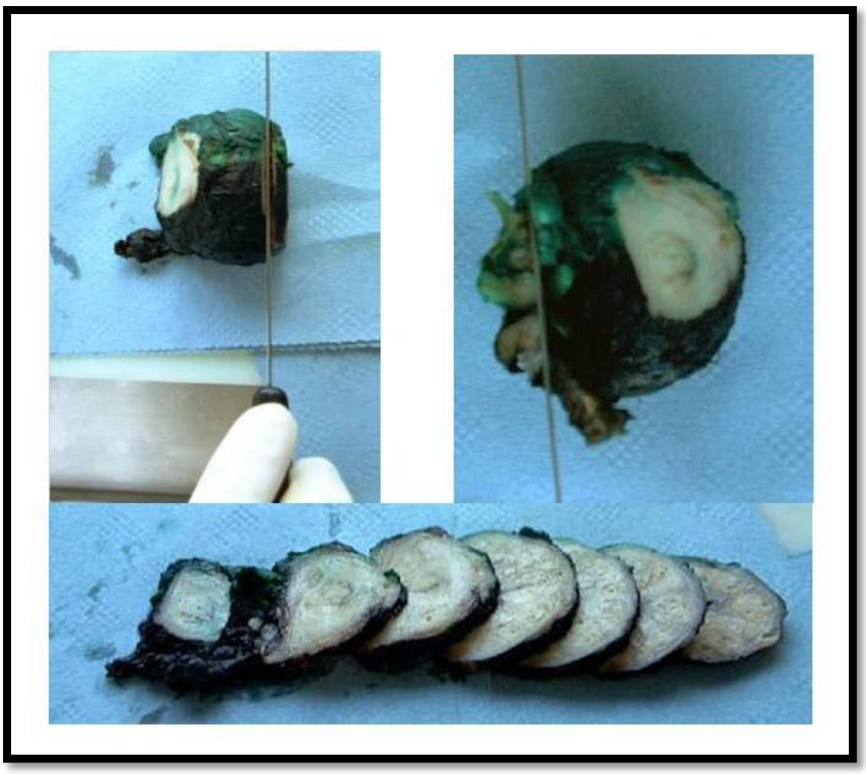
(c) Lay on posterior surface and ink left half of the specimen green and right half of the specimen black. Place in pot of Bouin's solution to fix the inks (instantaneous). Wash under tap until as much of excess green ink has gone. Then blot dry with tissue paper.



Blocks for histology:

1. Lay prostate on posterior surface and then cut a 3-4mm slice from the apex perpendicular to the posterior surface. Place on photo board – cut side up.

2. Fold the seminal vesicles backwards and then cut a full surface slice from the base margin, this is often not perpendicular to the posterior surface. If there is a large median lobe this slice can be more than 4mm thick. Place on photo board – cut side up.



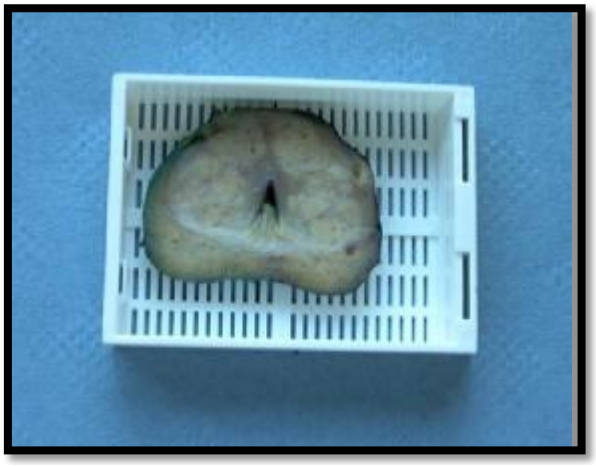
3. Then make 4mm slices parallel to the apex slice placing each in turn apex side up on board. Wiping the blade between cuts minimises carryover of ink onto the cut surface. If there are brachytherapy rods remove as you go along – don't try and cut them.

4. *NBT method* - When you get within 5mm of the insertion of the seminal vesicles STOP. Make a longitudinal cut from tip of seminal vesicles along their whole length and into prostate. This will demonstrate the junction of the seminal vesicle and the prostate. Sometimes the SV are ragged and this is not possible in which case just continue making slices ignoring this step. Lay slices on photo board and photograph.

5. *ISUP method* – most centres amputate the SV and then take them as multiple transverse sections – some only partially embed. There is no evidence to support which method is better.

6. Take the slices from the apex and base and then slice from left to right. These are put in small cassettes unless the base margin slice is thicker than block width then use large cassettes. Dictate which blocks are apex and which are base.

7. Transfer the remaining slices into large cassettes making sure that surface photographed (apex side) is the surface placed on bottom of cassette (so this is side that is sectioned)

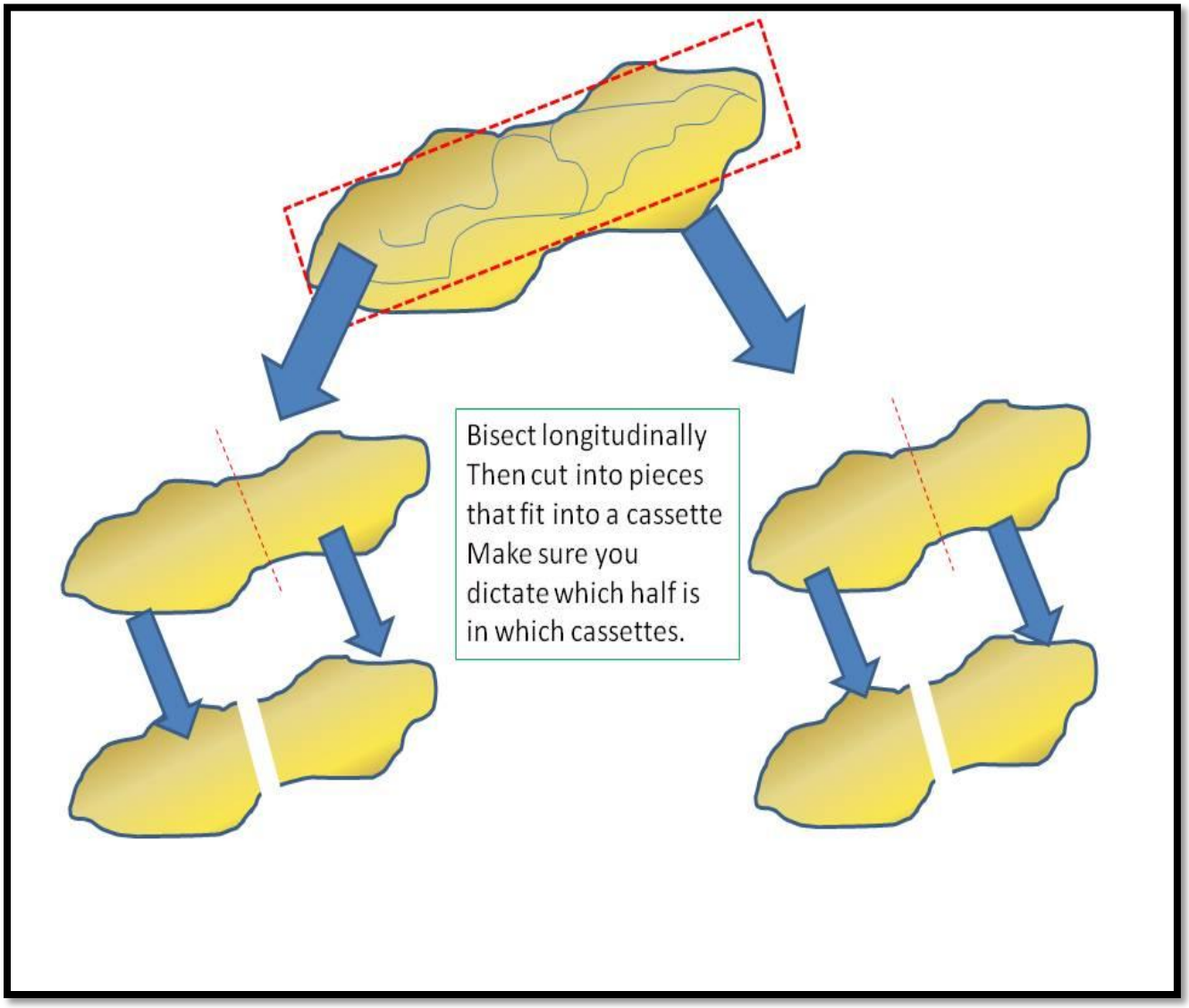


LYMPH NODES and PREPROSTATIC FAT

These are normally large pieces of fat with poorly defined lymph nodes.

1 Describe and measure each piece,
2 Embed all preprostatic fat noting if any palpable nodes
3 The lymph node packets are normally oval – bisect longitudinally if more than 3mm thick, and then split each half into cassette sized pieces – and dictate which half is in which:
"A fatty fragment 30x20x6mm, bisected longitudinally, one half in A1 and A2, other half in A3 and A4"

When you report the lymph nodes don't double count – ie count the most number of nodes in one half – assuming the other half contains parts of the same nodes.



REPORTING

Before reporting a RP look up the core results.

Record the PSA level from the prostate core data if no PSA level is on the form.

Histological tumour type

The vast majority are acinar adenocarcinoma. Use the WHO Classification for other subtypes.

Gleason score

There is still controversy about how to Gleason score RPs. The RCPath dataset advises using the dominant nodule – ie the tumour with the highest stage > highest volume.
The ISUP 2014 still uses the tertiary grading system – Commonest + next commonest + tertiary if smaller higher grade present or <5% (eg 3+4=7 Tertiary 5 or 3+3=6 tertiary 4). Some authors a cut off of 5% for the tertiary grade so if more than 5% and a higher score then this is put instead of the next commonest (eg 3+5=8 or 3+4=7 as per previous examples).

Grade group

The Gleason score is converted into a (ISUP) Grade Group.

Location

Use standardised terminology: Anterior, right / left lateral, right/left posterolateral, posterior, transitional zone (area around urethra extending anteriorly as approach base) – see diagram in margin section.

Extraprostatic extension (EPE)

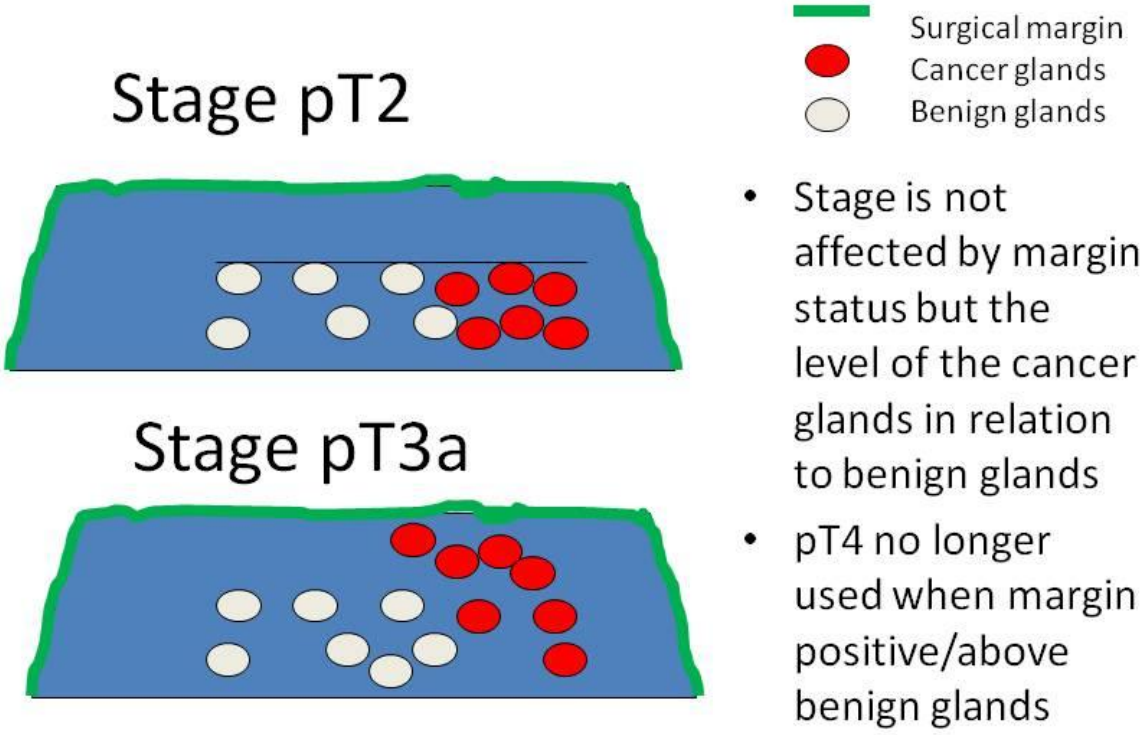
This is defined as tumour in extracapsular tissue – normally associated with fat or in the same plane as the extracapsular fat.
State the location using standard terminology.

Established – when there is clear breach – defined as greater than 2 high power fields
Focal – there is only a small area of breach

Mark the slide as this helps when reviewing for the MDT.

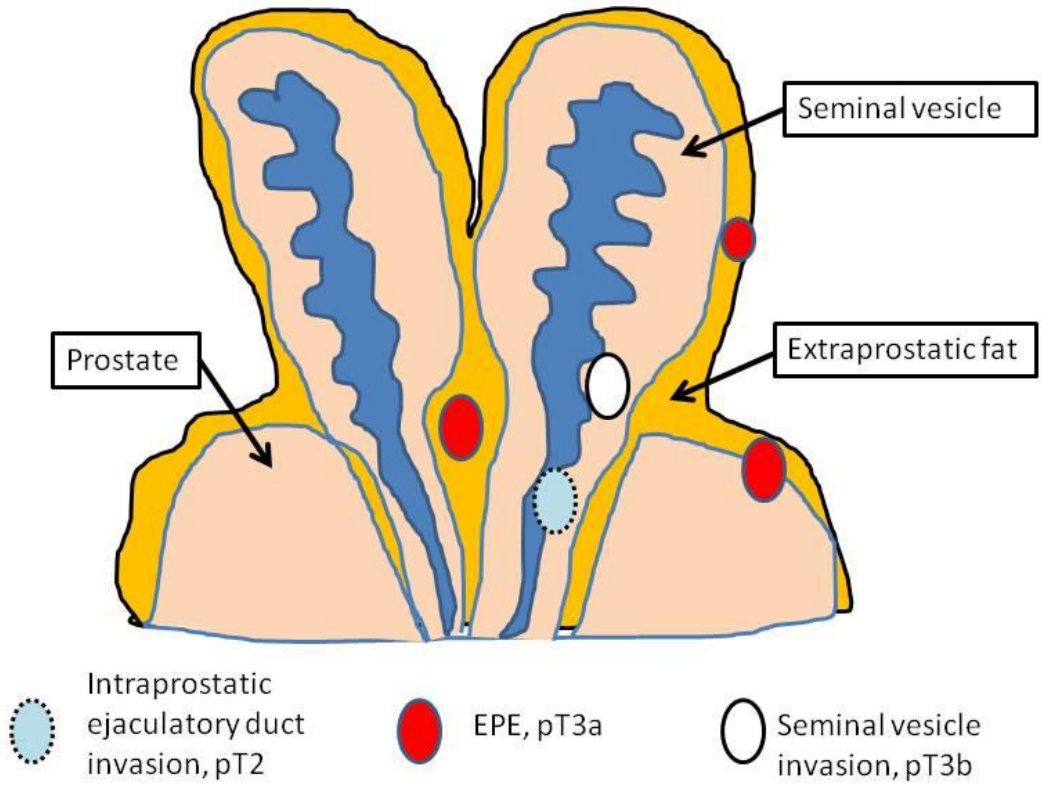
Bladder neck

If there is tumour in bladder neck this is now pT3a in TNM7 – this is defined as tumour above normal prostatic glands in the base sections.



Seminal vesicle

These are involved when tumour is lying in the muscle layers, not the surrounding connective tissue. There is no histological difference between the ejaculatory duct or the SV and so convention has defined the SV as the extraprostatic portion.

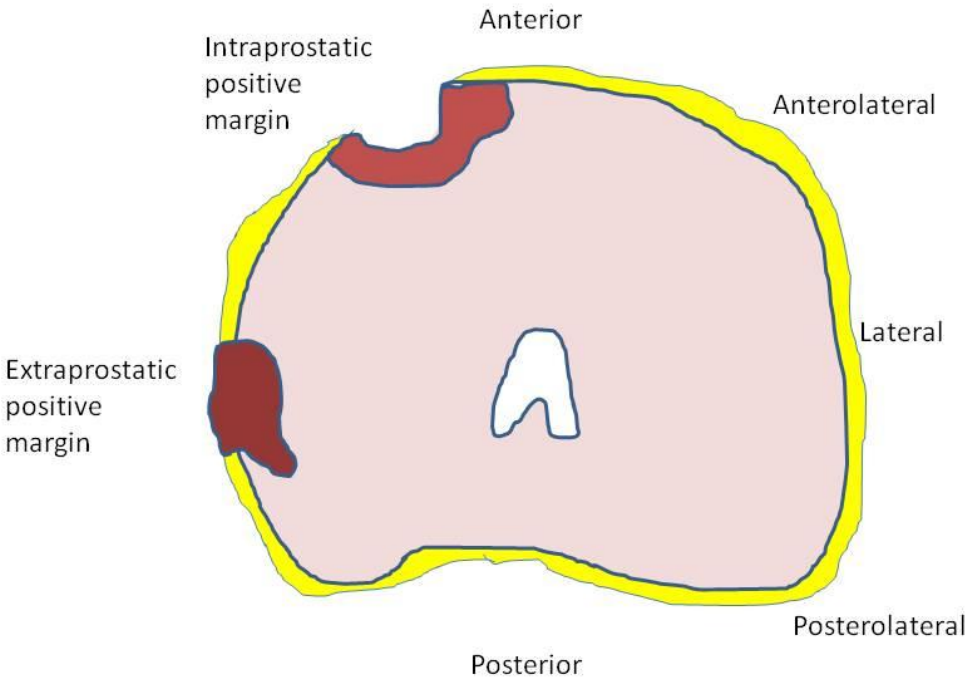


Tumour invades the SV via three routes – direct spread up the ejaculatory duct (commonest), spread into soft tissues around SV then extending into them, and via nerves or blood vessels – so called skip lesions – these are probably representing metastatic spread and may well be worse prognosis – comment on this in comments section.

If there is amyloid add a comment in the comments section that this is of no clinical significance and don't forget to snomed code (Prostate. Amyloid)!

Margin status

Circumferential Intraprostatic positive (IP margin)– the surgical margin is inside the prostate and tumour is present at this margin. (Stage pT2+ unless pT3 elsewhere).
Give the location using standard terminology.
Circumferential Extraprostatic positive (EP margin)– the surgical margin is outside the prostate but tumour has breached the capsule and extends to this margin.
Give the location using standard terminology.
Apex positive – tumour is present at the apical margin. (Debated if this is also pT2+ but we don't at NBT) –
NBT data - state if tumour present but not at margin as this can be correlated with core data.
Base (bladder neck)positive - tumour is present at the base margin. This is considered as pT3a in TNM7.
NBT data - State if tumour present but not at margin as this can be correlated with core data



Measuring margin length

There is evidence showing that a combined positive margin of greater than 3mm is a significant predictor of recurrence. Urologists are gathering this data as performance indicator.
Measure each margin on each slide and then combine the total and state if more than 3mm.
At NBT – separate these margins into Apex, base, IP and EP margins.

Lymphovascular invasion

This is very uncommon and perineural invasion can mimic this. If present there is often pT3b disease.

Lymph node status

Counting the number of nodes in the fatty tissue of the pelvis is extremely subjective, but the surgeons are obsessed with number of nodes. The size of the tumour deposit has been shown to be useful but not extracapsular extension. The nodes are rarely involved.

Stage – use TNM7 – as per proforma

SNOMED code

If lymph nodes present code these as well, add code for amyloid if present as well as prostate and adenocarcinoma.

NON-CORE ITEMS in NBT DATASET

Margin lengths

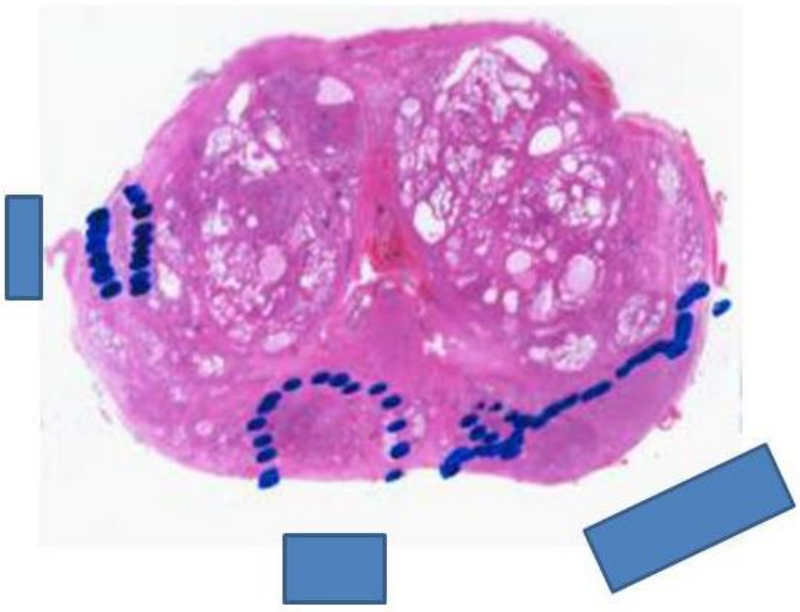
Giving the individual sites and legths of margins is useful for the clinicians

Maximum length

Measure the length on the slide. If the tumour extends over several blocks then the maximum length may be the sum of the block thicknesses (eg a tumour is present on the left side in 3 blocks ie 3 x 5mm = 15mm).

Volume calculation

This is purely an estimate but does give a guide to size of tumour. There is mixed evidence that this is of prognostic use.
Draw around each focus of tumour. Estimate the two dimensions as if the area was a square, don't measure the maximum dimension as this would overestimate the volume.
Express this in cm - multiply the dimensions and add all foci together. Then multiply by the approximate thickness of the block – I estimate this to be about 0.5cm to allow for shrinkage. The overall volume is expressed in ml (cm^3).
Another method is to measure the maximum dimension of the focus in one section and multiply the total length (ie the number of sections x block thickness) this number is multiplied by 0.4 to allow for the elliptical nature of a tumour.
Max width x max breadth x max length x 0.4 = volume.



Representative block – give a block with as many of the foci as possible. If there is SV invasion give this block as well.

Core biopsy result available on computer : This is to audit review prior to surgery – a requirement for NBT.

SPECIAL CASES

pT0 cases: Very occasionally no tumour is detected in the radical specimen, I am not an advocate of levels/flipping blocks. Review the core biopsies and if there was only a small volume in the cores this could explain the pT0. If there was a significant volume there may have been a mislabelling issue and DNA typing is advised.

Post therapy: Don't Gleason grade post hormones/radiotherapy/brachytherapy but do grade post HIFU.

NBT Extra dataset

Margin lengths
Apex margin – negative / negative but tumour in apex/ positive – length = mm
Base margin - negative / negative but tumour in base/ positive – length = mm
Intraprostatic - negative / positive – length = mm
Extraprostatic - negative / positive – length = mm

Maximum length = mm
Total volume = mm

Representative block =
Previous core biopsy on computer = yes/no

RCPath Proforma
https://www.rcpath.org/resourceLibrary/g048-prostatedatasetproformas-jun16-docx.html

Clinical information

Pre biopsy serum PSA† ‡,:……ng/ml Not available □

Nature of specimen(s) and macroscopic items

Specimen weight (i.e. prostate without seminal vesicles) ‡: ……. g

Seminal vesicles‡: Present (partially or completely resected) □ Absent □

(If present, Laterality: Left □ Right □ Bilateral □)

Lymph nodes‡: Present □ Absent □ (If present, Laterality‡: Left □ Right □ Preprostatic □)

Core Microscopic items

Histological tumour type†‡:

Gleason score: Not applicable** □

Primary Gleason grade†‡: 2 □ 3 □ 4 □ 5 □

Secondary Gleason grade†‡: 2 □ 3 □ 4 □ 5 □

Tertiary Gleason grade (<5%)†‡: 3 □ 4 □ 5 □ Not applicable □

Gleason score: ……+……..=……

Grade Group: 1 □ 2 □ 3 □ 4 □ 5 □ Not applicable** □

Location of dominant tumour: …….

Extraprostatic extension (EPE) pT3a†‡: Not identified □ Present □ Indeterminate □

If EPE: Location of EPE:……..

If EPE: Extent of EPE‡: Focal □ Established □

Bladder neck (pT3a): Involved □ Not involved □ Not applicable □

Seminal Vesicles (pT3b) †‡: Involved □ Not involved □ Not applicable □

Margin status†‡: Involved □ Not involved □ Indeterminate □

If involved: Extent (total): <3 mm □ > or = 3 mm □

If involved: Location: Apical □ Bladder neck □ Circumferential □

If circumferential margin involved‡: Intraprostatic □ Extraprostatic □

If circumferential margin involved: Location*(s)*……

Lymphovascular invasion‡: Not identified □ Present □

Regional lymph node status

Number of lymph nodes examined†‡:……

Number of positive lymph nodes†‡: …….

Maximum dimension of largest deposit‡:……..mm

Primary tumour – T category (TNM 2009) †‡

pT0 □ (no tumour) pT2 □ (organ confined)

pT3a □ (EPE, bladder neck) pT3b □ (SV positive) pT4 □ (involves other organs)

Regional lymph nodes – N category (TNM 2009) †‡

pNx □ pN0 □ pN1 □

Notes

** Post hormone or radiotherapy then Gleason score may not be reliable. Gleason score is not applicable to some morphological types (e.g. small cell neuroendocrine carcinoma).

† Data items which are currently part of the Cancer Outcomes and Services Dataset (COSD) version 6.

‡ Data items which are used in version 1.0 of the ICCR Prostate Cancer (Radical Prostatectomy) dataset.