Improving quality of prostate core biopsies

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The key to improving core quality is to address the whole process from patient to pathologist.

A simple guide is if you have more than 1 core per block and you can get three levels on one slide then the cores are inadequate.

Inadequate cores can occur at several stages and hopefully by addressing each in turn the quality will improve.

Stage 1: At the patient

The key to good cores is **NOT to use a needle** to remove the cores from the trucut needle. This fragments the core.

The trucut needle is rolled onto blotting paper and the core will come out and stick to the paper.

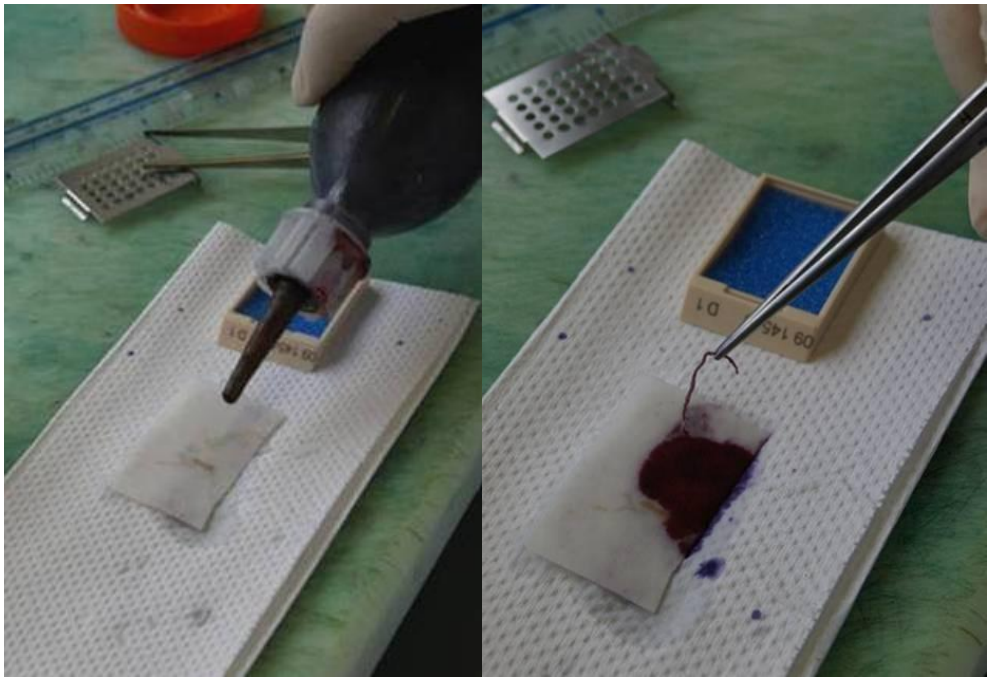
Then place this in formalin. The core may drop off the paper but this doesn't really matter.

If location of each core needs to be recorded then separate containers need to be used.

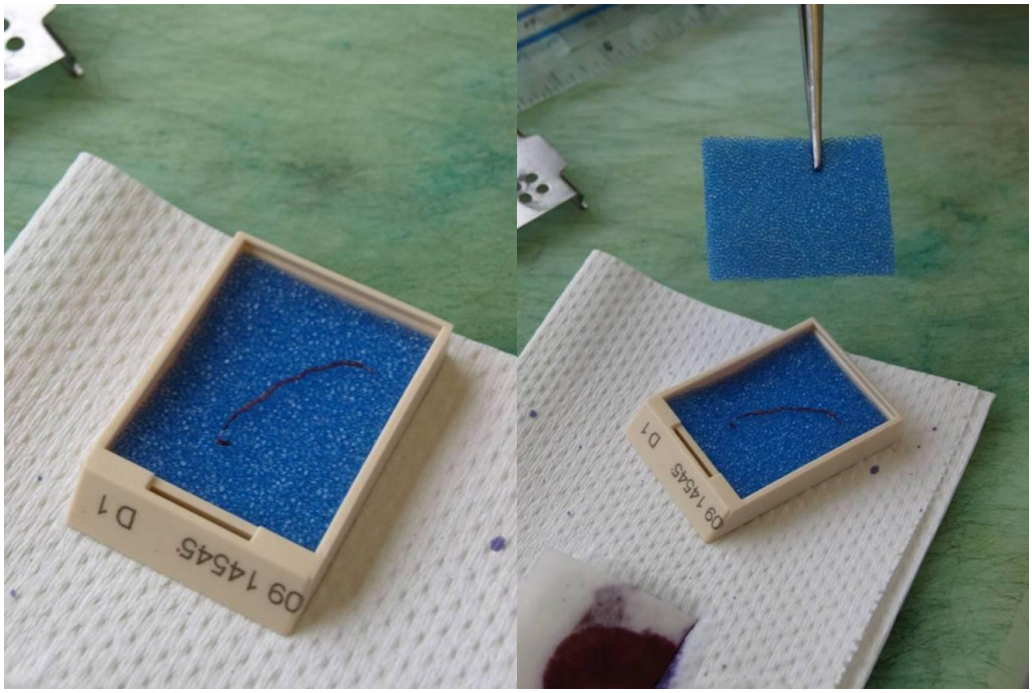
Stage 2: At the cut up

The cores are stained with haematoxylin and then transferred to blue foam in the cassette.

The haematoxylin allows the core to be visualised in the wax block but is not apparent in the final sections (unlike alcian blue which is used in some laboratories).



The cores are then sandwiched between foam, but this needs to **be soaked in formalin** otherwise the foam sucks moisture from the cores and they fail to process properly.



Stage 3: Embedding and Sectioning

At embedding the cores are removed from the foam sandwich – this should have flattened the cores enabling them to be embedded easily. Avoid putting more than 5 cores into one block. They should be lined up parallel as this aids counting etc.

Some centres use a metal T to push down the cores so that they are embedded flat.

The haematoxylin stained core can be easily visualised and it is now easier to see if a full section has been taken.

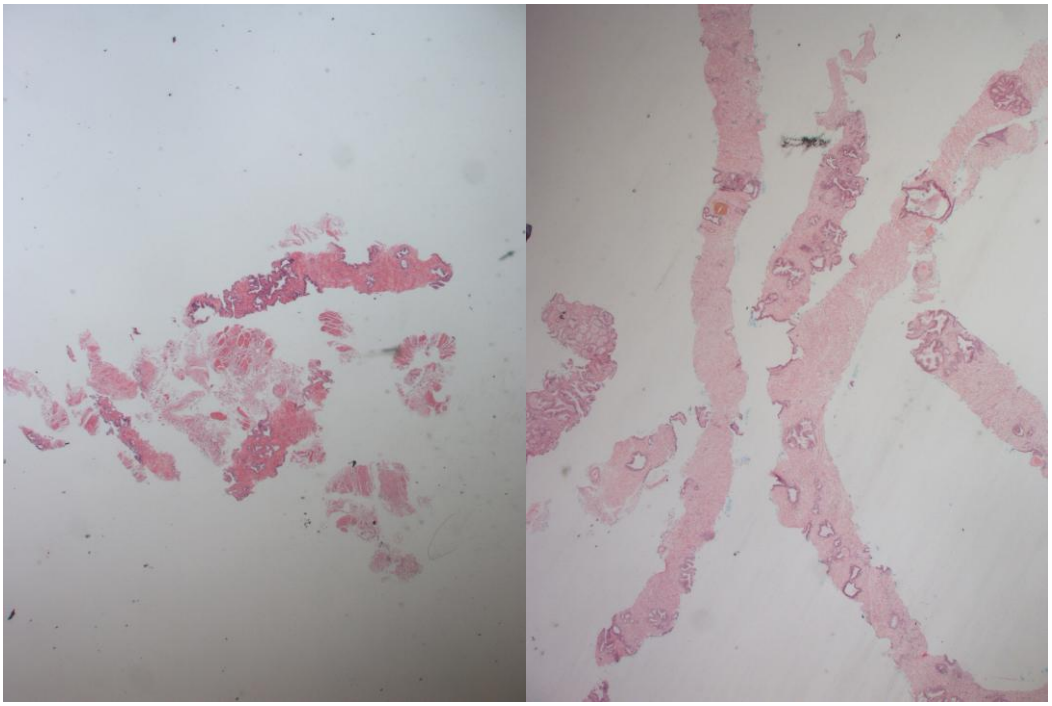
In the era of immunohistochemistry spare sections of each level need to be kept.

Most centres do at least 3 levels.

Stage 4: Education

There is a great debate as to who takes the best cores – urologists, radiologists, or specialised nurses – in my opinion this is a red herring as each group can produce good and bad cores but often the pathologist doesn't feed this information back.

A simple photograph comparing quantity of material on the slide is an extremely good way of alerting clinicians that there is a problem. The photograph below shows cores from two centres - both taken at the same magnification.



Lessons we learnt.

Our department used to receive the cores in small cassettes. The advantage of this was that there was no handling until embedding but the quality was terrible as it lead to a tangled mess and it was impossible to count cores. There was also crush artefact.

Then we moved to clinicians putting the cores on the blue foam directly, again the cores were not touched until embedding – but this caused a foam artefact in the cores.

The methodology described above has been used in Leeds and since we have used it the cores have greatly improved. We did have an artefact of poor processing, which we tracked to a BMS who was not using wet foam to sandwich the cores, so the cores dried out.

This method involves more time for the laboratory staff but the better quality cores meant that patients were adequately assessed and this in the long term will decrease repeat biopsies.