Mohs Micrographic Surgery Procedure

Surgery

1. A surgical margin around the visible tumour is drawn using a skin marker, giving the surgeon a guideline where to cut. It is followed by applying local anaesthetic to the patient to numb the area.
2. After the patient is locally anaesthetised, the marked surgical margin is then excised.
3. The excised tissue is mapped and is usually cut in half or quarters depending on the size or shape of the specimen.
4. Each end of the specimen is marked with tissue marking dyes, to help indicate and locate where the tumour is.
5. The specimen is placed in numerical order from top to bottom in a petri dish, marking the top with a dot, informing the technician that that is the first specimen.

Frozen Section Process

1. The technician anaestosises the specimens given, to plan how the tissue will be embedded, making sure that all the surgical margin can be laid flat.
2. Each specimen is carefully placed to a cold metal disc, laying the epidermis first and pressing the rest of the specimen down.
3. D.C.T. is spread around the tissue in an oval or elliptical shape. This makes the specimen easier to pick up while sectioning.
4. Specimens are left to freeze in the crystallat which is set to -25°C to -30°C. A labeled metal chuck is laid on top of the specimen when it is ready.
5. The specimen is secured in place and is orientated to align with the blade so it cuts evenly.
6. The specimen is cut until the whole tissue is full face.
7. The tissue is guided with a brushed or sectioned with an anti-roll blade to prevent it from rolling.
8. The first section is picked up and checked to see if all the epidermis is visible under a microscope. If all the epidermis is visible, three additional leveled section is picked up to give the surgeon a variation.
9. The slides are then heat fixed on a hot plate at 90°C for 10 seconds.
10. All slides are stained together with a rapid regressive H&E stain.
11. After the slides have been stained, they are immediately coveredliped and delivered straight to the surgeon.
12. The slides to determine the diagnosis.
13. If there is tumour visible, the surgeon marks the patient’s map, indicating where there is tumour and only removing tissue from that region.
14. The whole process is repeated until the patient is clear of any tumour and is then repaired.

Conclusion

Ultimately, every specimen given should be treated with the highest standard of care as each specimen is from a patient. As Mohs Micrographic Surgery relies on accuracy and precision, every mistake means more tissue will be cut from the patient.

Challenges in Frozen Section in Mohs Micrographic Surgery

There are many challenges in processing tissues in Mohs Micrographic Surgery. But the main problem usually is from embedding and sectioning the specimen given to the technician.

As every surgeon has a preference of how they score the tissues they excise, the difficulty in embedding the specimen given can vary depending on the site of the excised skin. The tissues given could have an irregular and uneven shape or a firm structure if the tissue was taken from complex skin structures such as the ear or the nose. These tissues can sometimes be hard to flatten evenly and it is important to make sure that the surgical margin of every specimen is always entirely visible. Before embedding the specimen, it is important to analyse the tissue given to plan how the tissue will be embedded. This helps to ensure that all the surgical margins can be laid as even flat as possible.

Other complicated areas can be sites with a lot of adipose tissue such as the scalp, temple, and the cheek. These areas generally need more time to process as they are difficult to section since adipose tissue break off easily if sectioned thinner or if it is not cold enough. fatty specimens need to be freed longer and cut thicker from 9 to 12 µm to give the best result. Very firm tissue structures like cartilage on the other hand are best sectioned thicker. Its firm and flexible nature breaks off the section and while sectioning.

Additionally, very cosmetically sensitive areas require much more attention. In areas around the eye like the canthi and the eyelid, it is important to maximise tissue conservation as these areas are very difficult to repair. Surgeons usually give tiny specimens such as the scalp, temple, and the cheek. These areas generally could have an irregular and uneven shape or a firm structure if the tissue was taken from complex skin structures such as the ear or the nose. These tissues can sometimes be hard to flatten evenly.

The idea behind Mohs Micrographic Surgery is to remove the whole tumour with minimal loss of healthy tissues. Therefore, the whole surgery relies on accuracy and precision in order to avoid missing any tumour around the surgically cut margin and saving as much healthy tissue as possible.

Mohs Micrographic Surgery relies on accuracy and precision, the steps in processing tissues has to be consistent and since it is a day procedure, the surgeon needs to get the results in quickly to reduce the time the patient is waiting. Therefore, frozen section is considered to be the most effective method to diagnose patients.

The main advantage of frozen section compared to normal routine paraffin sections is rapid diagnosis. This reduces waiting time so the patient can be surgically cleared of any tumour during the day of the procedure as the results are ready in 10 to 30 minutes depending on the complexity of the specimen. The slides are then read by the surgeon who makes a decision if more tissue needs to be cut or the whole margin is clear of any tumour.

What is Mohs Micrographic Surgery?

Mohs Micrographic surgery (MMS) is a highly specialized surgical technique performed by Mohs surgeons and used for the treatment of complex skin cancers. Developed in the 1930s by Fredric Mohs, the technique has since been the most advanced and single most effective procedure for removing Basal Cell Carcinomas (BCC) and Squamous Cell Carcinoma (SCC) – the two most common forms of skin cancer.

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