WOODCUTTER'S TECHNIQUE FOR PHACO

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The phakoemulsification Procedure basically involves removing the nucleus by dividing it into small fragments. For grade III & IV nuclei, the chopping technique is considered to be the best amongst the existing techniques. The author wants tohighlight a new approach to divide such nuclei and has named this new technique as the "Woodcutter's Technique".

Have you ever observed a woodcutter at work? When he wants to divide a wooden log into 2 vertical pieces, he embeds a chisel at a point. Then he starts chopping at the log with an axe some distance away from the chisel. He continues to chop away in the direction of the chisel , and when he is approaching it, the log suddenly breaks into 2 vertical pieces.The cleavage extends beyond the chisel and penetrates deeper into the wood. The same principle is used to divide the nucleus in the Woodcutter's technique.

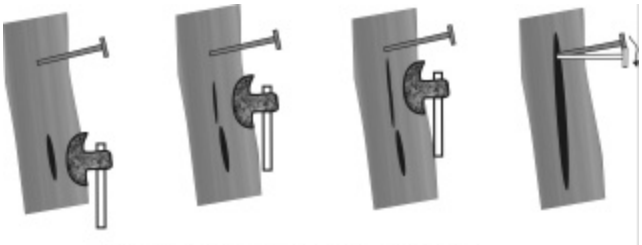

Figure 1 Woodcutter's technique

The Woodcutter's technique

In the chop technique, we normally hold the nucleus with the phako tip and then move the chopper towards the phako tip. As against this, in the Woodcutter's technique the chopper is placed at the same point and not moved. Instead the phako tip, which is holding the nucleus is moved towards the chopper, (with phako power on). This automatically divides the nucleus into two fragments, when the phako tip approaches near the chopper. Thus the chopper acts like a chisel and the phako tip like an axe as shown in figure2.

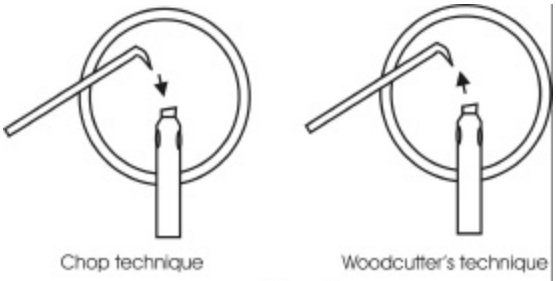

Figure 2

Steps of the Woodcutter's technique

The Phako sleeve should be 1.5 to 2 mm behind the outermost point of the phako tip. The exposed tip (phako needle part which is not covered by the sleeve) should be slightly more as compared to that required for a routine chop technique.If you keep only a small part of the tip exposed then the phako tip enters the nucleus to a lesser depth and division become slightly more difficult. For a harder nucleus the amount of phako tip exposed should be more. However this distance should not be too much either or else irrigation may stop even if you withdraw the phako handpiece slightly.(This is because the irrigation ports come near the incision and get covered by the incision).

For the woodcutter's technique there is no need for sculpting or making a groove in the nucleus. This technique is directly applied to divide the nucleus.

Steps:

- The exposed phako tip should be slightly more than usual as discussed earlier.
- Both the instruments, i.e. the Phako needle and the chopper are introduced inside the anterior chamber.
- Push the nucleus slightly (by 1 mm) to the opposite clock position (opposite to the incision site) with the help of a chopper.
- Embed the phako tip into the nucleus. You should enter keeping the handpiece 70 to 80 degrees vertical. The advantage of this is that the tip gets fully embedded inside before you reach the centre of the nucleus or the centre of the capsulorrhexis.

- When the preset vacuum is reached, pull the nucleus towards the incision site by 1 mm. Embed the chopper at the capsulorrhexis margin into the nucleus. This is possible only when you are holding the nucleus firmly with the phako tip.
- Then push the phako tip with the phako power on towards the chopper. This will break the nucleus into 2 vertical fragments in nearly all the cases.If not, then introduce the chopper into the depth of the crack that you have made and try to separate the two fragments from each other. It is necessary to go to the base of the crack with the chopper because it is then easier to displace the fragments without stretch on the zonules. If you still cannot divide the nucleus, which may happen in the beginning then rotate the nucleus by 180 degrees(after repeating hydrodissection if necessary), and perform the same procedure again.
- For the second crack or cleavage, rotate the nucleus. The previous groove (which is created by the movement of the phako tip towards the chopper) gives you space.(You get more space as the hard central part hasbeen taken out). The space can be utilised for inserting the phako needle in the centre and again dividing the nucleus as mentioned before.
- This procedure is repeated till small fragments of the nucleus are made.

In most cases you will be able to achieve fragmentation of the nucleus into 2 pieces except in very soft nuclei.

Advantages of the Woodcutter's technique:

1 While making a division of the nucleus you are always away from the posterior capsule. Hence there is no danger of rupturing it.

2 The chopper stabilizes the nucleus. Because of this stretch on the zonules is less. This is why I use phako power to divide the nucleus rahter than the chopper. The chopper only stabilizes the nucleus, and gives direction for the crack to develop.

3. As the phako tip is embedded in the nucleus when phako power is applied, even if more power is used it will not get directed towards the corneal endothelium.
4. You get more space in the centre as the hard part is taken out when we move the phako tip towards the chopper with phako power on.
5. You can increase vacuum to a great extent. Even if there is a slight surge it won't cause much harm as the posterior capsule is far away and there is a nucleus in between the phako tip and the posterior capsule.
6. Less power is required as phako is done after stabilizing nucelus with chopper as if you are feeding the nucleus into the phako tip.
7. Division is achieved in one stroke in most cases especially with hard nuclei.
8. Less phako time is required as divsion is in one stroke. The procedure is fast to perform.
9. Cleavage extends deep into the substance of the nucleus because of the strain created by the chopper.

We may feel that the phako needle will touch the chopper, but this does not happen because the nucleus gets fragmented into two even before you can reach the chopper.That is also why you will never go upto the equator i.e. the peripheral soft part of the nucleus.

However the phako needle can get quite hot as the phako power is on when the tip is occluded.

The wood cutter's technique, in my opinion is a very simple procedure and easy even for the phako beginner.It is also easier to use with a clear corneal incision as compared to a scleral tunnel, because the approach is more directin a clear corneal incision and manipulations are easy.

The Woodcutter's technique does not require a long learning curve, and most surgeons are able to master the technique perfectly if they persist.

A very bold surgeon is the one who realizes that his patient takes all the risks