Dentanomic®

One of the biggest obstacles to effective general practice dentistry is that of blunt or damaged instrumentation. Tooth extraction is a surgical procedure that is made easier and safer by using sharp tools of the right size and shape for the job.

There are two surgical extraction techniques and an instrument type for each technique:

Elevation technique:
Elevating a tooth involves the placement of a tool between the tooth and adjacent bone. The tool is then rotated and held in position – this stretches and tears the periodontal ligament. These tools can exert significant forces on tooth roots and surrounding bone and should be used with care. Elevation tools need an undamaged, smooth edge and have flatter angled cutting edges for strength.

FIGURE ONE

Luxation technique:
Luxating a tooth involves the placement of a tool into the periodontal space between the root and tooth socket. The tool is rocked and rotated in this space to cut the periodontal ligament. Luxation instruments are much slimmer than elevation instruments. Luxation technique tends to be less damaging to oral tissues than elevation technique, but requires more care and delicacy. Luxation tools are slimmer and more easily damaged than elevation tools. Luxation instruments must be kept very sharp and slim to do their job – they can be thought of like a chisel or scalpel blade.

FIGURE TWO

A blade can either have an acute or flat angle forming the cutting edge. More acute angled edges are sharper – they will cut better, but are more prone to damage. Flatter angled edges will not cut as well but are tougher and can cope with more abuse.

We often think of blades blunting by losing metal from the edge – but this is not correct – at least in the early stages. Blades blunt because the sharp triangular edge begins to bend over (Figure 3).

If this bend is not realigned, the edge of the blade will start to fray and small pieces of metal will fracture off to leave a blunt cutting surface (Figure 4). You can see the bend and subsequent damage makes the cutting edge much thicker than it should be. This makes it impossible to seat the blade correctly into the periodontal space.

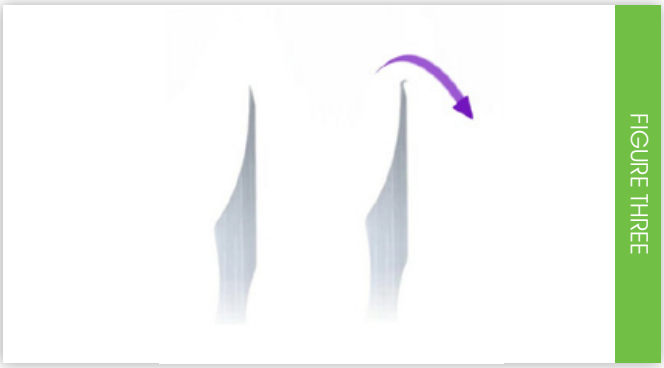

FIGURE THREE

FIGURE FOUR

Figure 4: This instrument used to be a luxation tool! The blade is twisted and chipped – this is a problem as it means that the instrument will no longer fit into the slim periodontal space. If force is applied, this blade will slip sideways and cause iatrogenic damage.

Dental instruments will not last for ever – a program of maintenance and replacement when needed makes for easier, safer and faster dental surgery.

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It's a bad move to sharpen dental instruments – but not in the way that you think!

Chefs maintain knives by honing the edge, not sharpening. This is normally done using a rod of steel or ceramic that the knife edge is swept along to realign the bent metal back to the original shape.

If you sharpen a dental instrument, you are removing metal and changing the cutting angle – which will change how the blade works. The sharp bevel on the blade has been carefully designed and may even be different at different points on an edge profile. To get a correct and consistent angle on a curved dental instrument is very difficult with hand sharpening.

FIGURE FIVE

Figure 5: This luxation blade has been badly resharpened (circled), changing the original slim, acute edge into a blunt, wide cutting edge. This means that the blade is trying to work as an elevation instrument, without the strong structure required to do so.

Think instead about honing your dental instruments.

After each use, clean the instrument. After cleaning, take a fine sharpening stone (or ceramic or diamond sharpening tool) and use it gently with fingertip pressure only. Remember that you are not trying to remove metal, you are trying to align the edge back to the original shape.

- Because of the gentle action of honing, this will only work if the instrument is checked and maintained after each use.
- You need to start this process with undamaged instruments with correctly ground cutting edges.

Honing technique:

1. Look at the shape and angle of the cutting edge of the blade. Against a bright light, you can often see the angled ridge of metal where the edge of the blade has been bent. You can use a sliver of plastic (or your finger tip if you are gentle and very careful) to feel this ridge if you run the plastic along the instrument from the handle to the tip (never the other way round).
2. Use a sharpening stone, card or cone that matches the shape of the blade section that you are trying to hone. Wear eye protection when honing instruments. Lubricate your honing instrument as recommended by the manufacturer.
3. Match the angle of the honing tool to the angle of the cutting edge.
4. Gently move the honing tool forwards and over the cutting edge of the instrument, keeping the tool angle consistent (Figure 6). Alternatively, especially for flat cutting edges, keep the honing tool flat on the table and move the instrument backwards over it.
5. If another honing movement is necessary, lift the honing tool off the instrument and return to the start position before repeating the procedure (Figure 7).

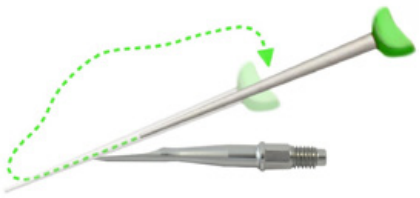

FIGURE SIX

Matching the angle to the cutting edge of the blade, gently slide the honing tool forwards to straighten the blade edge

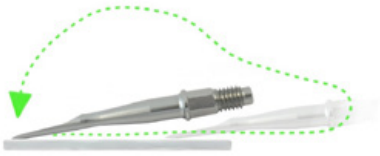

FIGURE SEVEN

Matching the angle to the cutting edge of the blade, gently move the instrument backwards over the stone to straighten the blade edge

6. The small ridge of metal should disappear within 1-3 honing actions. Check the other side of the blade to ensure that the ridge hasn't been pushed over to the opposite side, if it has, then gently repeat the honing action on this side until the blade edge is straight.
7. Clean the instrument and autoclave it ready for the next use. Always store dental instruments dry in an autoclave bag to minimise the risk of corrosion.

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