

can follow the contour of the tooth (figure 9) and provided the lip is protected and a little care is employed, they are unlikely to cause any iatrogenic issues. Any space that is available before the IPR is carried out can be measured with an interproximal gauge. The smooth section of an interproximal strip is placed between the teeth and then the diamond abrasive section is pulled through the space. The thinnest strip that is widely available is 0.06mm thick at its smooth section and 0.08mm thick at its abrasive section. The next strips are typically 0.1mm and 0.13mm thick at their abrasive section and these can be pulled through the site in turn. If a strip is folded in two it will by nature now be twice as thick, so that a 0.08mm can be folded to create a 0.16mm space, a 0.1mm strip can be folded to create a 0.2mm space and so on. This is a process that can prove time consuming if needed at a number of sites and is not particularly popular with patients.

Another popular option is the use of an air-rotor, particularly when larger amounts of IPR are envisaged. Most authorities recommend that the bur is positioned at the contact point 90 degrees to the labial or palatal surface and the bur can be gently 'wiped' in an occlusal direction, alternating from buccal to lingual. Plenty of water should be employed and care taken to avoid creating any hidden ledges at the cervical margin. It is particularly important to keep in mind the natural shape of the tooth and not create sharp angles and edges where none existed originally. The tooth surface may be finished with soft fine strips. One further suggestion is that a very thin piece of wire could be placed interproximally before any IPR is commenced in order to protect the interproximal soft tissue.

Discs and gyrotory devices (figure 10) are also often advocated for IPR and these offering varying degrees of flexibility and so, again, the contour may need to be improved by the use of interproximal strips and particular care should be taken to avoid iatrogenic damage and to match the natural contour of the tooth where possible. When measuring the interproximal space created, the relevant interproximal gauge can be inserted (figure 11). It should not be difficult to place between the teeth and nor should it be loose: ideally the clinician will feel a slight tug where the teeth are accommodating the gauge but slightly gripping it as they flex in their ligament space. If it is not an Invisalign case then care

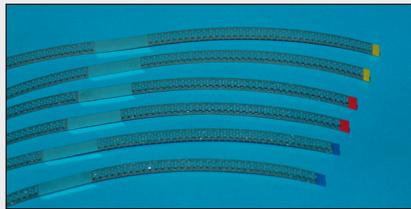


Figure 8: IPR strips



Figure 10: Use of discs for IPR



Figure 9: IPR strips in use

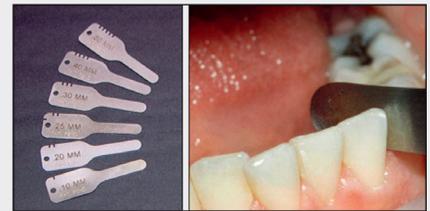


Figure 11: IPR gauges

should be taken that the space created by IPR does not get lost. This has been described as a 'critical anchorage situation' by Chudasama and Sheridan with retainers, headgear, miniscrews, archwire stops and molar bands all advocated as needed to retain the space that has been created. This is not a worry for Invisalign treatments because by nature the aligners will act to retain the teeth in an appropriate position.

### Conclusions

Interproximal reduction is a safe and useful adjunct to orthodontic treatment planning. It could be used to create up to 10mm of space

in each dental arch, but typically clinicians are restricting the amount of IPR they utilise to create up to 6mm of space, taking 0.2mm to 0.5mm from a number of different interproximal sites. Flared teeth and heavily restored teeth may be preferred as sites for IPR and a useful adjunct to planning the IPR can be the use of Invisalign's ClinCheck software which will help determine the location and timing of IPR in conjunction with Invisalign treatment. IPR strips tend to be used to create up to 0.3mm per site while burs and discs tend to be employed for larger amounts of IPR.

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