

TWO STAGE REMOVAL OF TEETH IN ORTHODONTIC TREATMENT

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Closing of spaces after extractions in orthodontic treatments have always been and will still be a major problem, particularly in the lower jaw, among orthodontists. Primarily the problems will not be the closing of these spaces in the active period of the treatment, but will be in the reopening of these spaces after the retention period and the removal of all appliances.

The main reopening will be after closure of extraction spaces in treatments where extractions of first permanent molars have been done because of decay etc. and where second deciduous molars are remaining after congenitally absence of second bicuspid. In discussions with orthodontic colleagues I have found that those colleagues doing more four bicuspid extractions than the average orthodontist are very much against extraction of these molars. Their major argument for this is the difficulty of closing the extraction spaces in the lower jaw and maintaining closure. The reason for this will be the large space left after removal of the molars, the fast bone shrinkage at the extraction spaces in the lower jaw and the long distance the adjacent teeth have to be moved to get these spaces closed. But when I argue that about 50% of all extraction spaces in four bicuspid extraction cases are reopening after removal of all appliances, these colleagues are in a hurry to point out that these cases are very difficult, they are combined with a severe mal-

occlusion, there has been a lack of co-operation etc., etc.

Coming from Norway with a much higher degree of decay among schoolchildren than here in Australia, we as orthodontists are almost daily facing the problem: extraction of bicuspid or molars because of deep decay, pulp exposures, root resorptions and root abscesses in heavily filled first permanent molars. Being taught and raised in the belief that we also as orthodontists have to think of the patients when they are older than just our treatment period, I think that we have to consider more often than we actually do the removal of the worst teeth in our patients and not, because of more work and a prolonged treatment period, take the easiest way to success and extract four bicuspid. There is also the fact that when our patients reach the age of 40 years and more they will on an average have left in their mouth more bicuspid than molars, due to the fact of bifurcation involvements in permanent molars with periodontal diseases and more difficult nerve treatments in the molars compared with the bicuspid. The dentist will then have bicuspid to rely on with his bridges and dentures, and if the orthodontist could have this in his mind everytime he has a choice between bicuspid and molars, I think we do a good job for the patient, not only in the short time of the orthodontic treatment, but also in the long run.

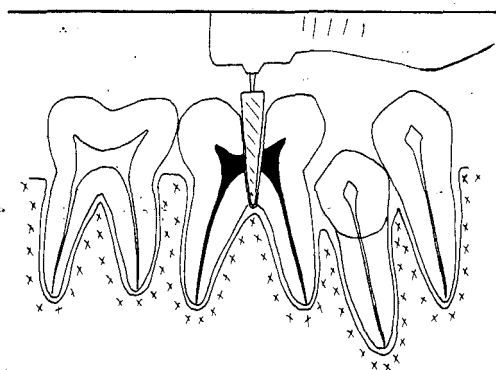


Fig. 1 — Splitting of the lower first permanent molar after root canal therapy due to decay etc.

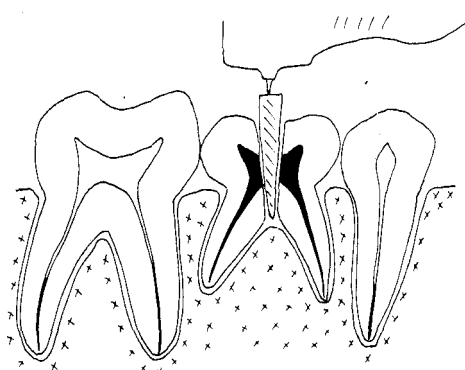


Fig. 2 — Splitting of the second deciduous molar after root canal therapy due to congenitally absence of second permanent bicuspid.

Whenever I had the choice, I have always taken out heavily filled and decayed molars before bicuspid and because of this have been faced with these remaining spaces in the lower jaw. The same spaces have also occurred when trying to remove remaining second deciduous molars after congenitally absence of the second bicuspid. Therefore I have tried hard to minimize the difficulty of achieving and maintaining space closure in the lower jaw after removal of deciduous and permanent molars. The main reason for these remaining spaces in the lower jaw is the long distance between the second bicuspid and the second permanent molar or the first deciduous molar and the first permanent molar. The closure of these spaces would have been much easier if

as a guide I cut the molars apart down to the bifurcation and the explorer with a suitable bur or diamond. (Figure 1 and figure 2). When the tooth is completely split and the two parts separated, it is very easy to take out the most convenient part of the molar. I have always done the necessary banding before splitting and extraction, so that the appliance can start working immediately after the "half" extraction.

The idea of this method came to me after seeing bridgework that my father, Dr. Rolf Hjulstad, Trondheim, Norway, had done more than twenty years ago where he had used half of the permanent molars in the lower jaw and palatal root in the upper permanent molars for abutments for bridges after necessary RCT, splitting and "half"

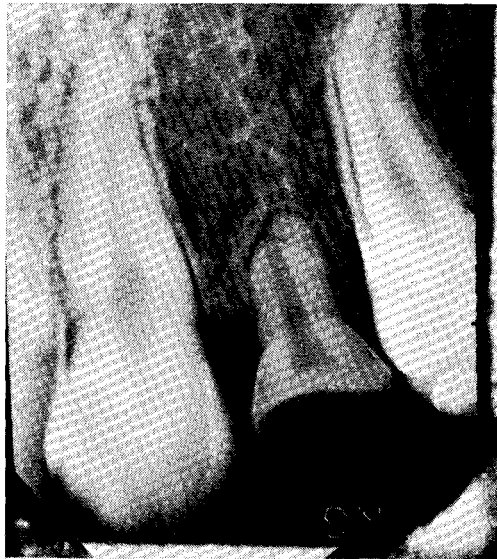


Fig. 3 — X-ray showing remaining deciduous upper right cuspid after congenitally absence of upper right permanent lateral and with the permanent cuspid in contact with the permanent central.

the first permanent molars and the second deciduous molars were more narrow and the distance shorter. Because of this long distance I have started to split lower first permanent molars and second deciduous molars to be extracted into halves and extract only the part of it that would be best suitable for my treatment. With a block injection, an x-ray showing both the roots and a high-speed drill, it is very easy to cut down to the pulp chamber, find the openings to all the canals, put on the rubberdam, extirpate the nerve and do an easy root canal therapy (RCT) of the canals in the part to remain after the splitting. I use pure iodoform powder mixed with eugenol for all my RCTs and with this technique I have had only success. After sealing the cavity with cement and an injection buccally, I find the top of the bifurcation with my explorer and using this

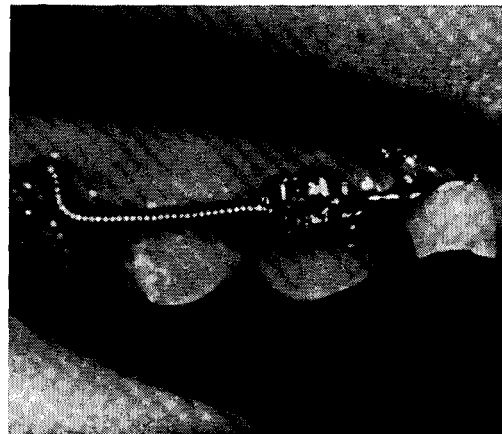


Fig. 4 — The remaining deciduous cuspid shown after proximal grinding and with the sectional appliance in place.

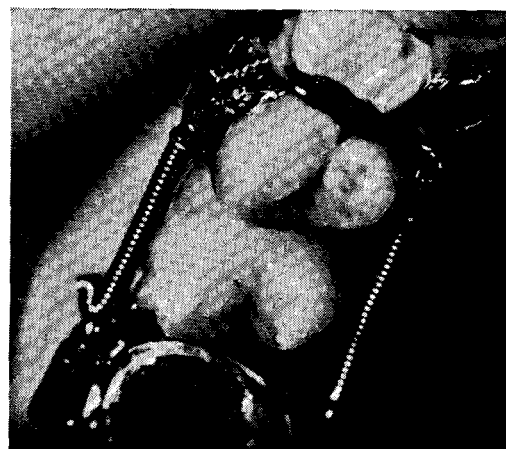


Fig. 5 — Here is shown the sectional appliance used to move the first permanent bicuspid with bodily movement into the grinding spaces of the deciduous cuspid.

extractions. Being an orthodontist my father is not doing these bridges any longer, but by encouraging me to do the same in my bridgework he almost pushed me to this idea of splitting molars in orthodontic treatment. In the few cases I have used this splitting technique I have had only success and this appears to be a reasonable answer to some of the problems particularly in the lower jaw involved with removal of molars in orthodontic treatment.

I have also adopted this method on bicuspid extractions in orthodontic treatment and have, after necessary banding, ground off as much as possible of the proximal surfaces of the bicuspid to be extracted. The treatment has started immediately after this grinding and when these grinding spaces have been closed, the full extraction of the bicuspid has been done and the treatment continued in the usual way. We get cases that are not plain four unit extraction cases, and in these cases can perhaps this way of doing it give us a better closing of the extraction spaces with less bone shrinkage and less reopening of these spaces. Figures 3, 4 and 5 show closing of such grinding spaces on a patient where I wish to move upper right first and second bicuspid till contact with the cuspid after congenitally absence of upper right lateral and remaining deciduous cuspid. The treatment has just started but the principles are evident.

SUMMARY

An approach to the closing of extraction spaces and avoidance of bone resorption in orthodontic treatment has been presented. If removal of first permanent molars because of decay or of second deciduous molars because of congenitally absence of second bicuspid is chosen, the treatment starts with necessary banding, RCT and splitting of the molars followed by extraction of the most convenient part of these split teeth. The adjacent teeth are then moved until in contact with the remaining part of the molars and then extraction of this part is done with continuous movement of the adjacent teeth into the new extraction spaces. In cases with bicuspid extraction the author often chooses to grind off the proximal surfaces of the teeth to be extracted and starts moving the adjacent teeth into these spaces before final extraction. The author believes that these methods of closing extraction spaces will give less bone resorption at the extraction spaces with easier closing of them and minimizing the reopening of these spaces.

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