

## The surgical-orthopaedic treatment of lower protrusion

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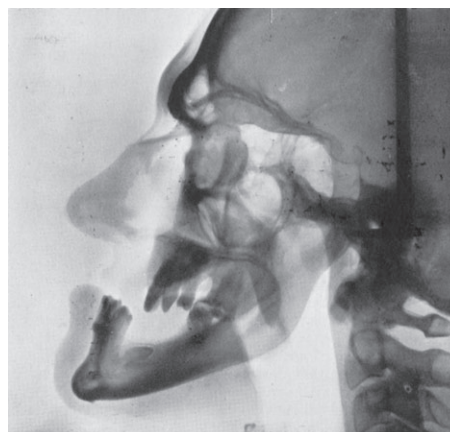
The treatment of the third group of lower protrusion, which, owing to the intensively developed protrusion of the lower jaw, renders purely mechanical therapeutics inadequate, remains the sphere of jaw surgery. The astonishing results attained by the operative procedure, coming just of late into evidence, offer a sufficient guarantee for possibilities of treatment full of prospect even for such forms of abnormal size of the lower jaws, which, owing to the disfiguring consequences and functional disturbances, cause the patient great trouble both mentally and physically. Of the different operative procedures applied to the lower jaw, the horizontal severing of the mounting branch of the lower jaw above the lingula mandibulas, as stated by Lindemann, can be considered the method of choice. This statement has remained the fundamental conception for many modifications of procedure, as applied later on by Pichler, Kostecka, Wassmund, Ernst, and others with good results, whereby however, the disadvantage of leaving visible scars could not have been fully eliminated. This factor will not infrequently be the decisive factor in choosing the method as with a correction of the disfigured features, which had enticed the patient in the first place to have the operation performed, also a complete cosmetic success is expected. Visible scars are not taken willingly into the bargain. Thus operative procedures resulting in a shortening of the protruded lower jaw by severings and partial sections in the region of the

horizontal branch and the mandibular angle will only be performed, owing to the resulting scars, in such cases where the patient resolves on an operation on account of functional disturbances, when also visible scars do not play a decisive factor with a view to the object of the operation. The following will give a brief account of the techniques of osteotomy of the mounting mandibular branch according to the Lindemann's procedure.

After a basal conductive anaesthesia at the foramen ovale and a local narcotising of the field of operation, one proceeds from a small cut at the lower edge of the external ear directly adjoining the lobe of the ear by a blunt advancing to the rear edge of the lower jaw and cautiously loosening with the help of a narrow raspatorium, following the course of the severing line, periosteum and soft tissues at the buccal side of the bone. Into this soft tissue periosteum opening, a keyhole-saw provided with a protecting cap, is inserted. After the correct adjusting of the saw the protecting cap is removed, and the sawing process can start. The sawing movements as well as the correct position of the saw is constantly controlled by the first finger of the hand of the operator, inserted into the patient's mouth, to avoid at the same time the perforation of the mucous membrane of the mouth. The jaw severed on both sides is now set back, and placed for 6–8 weeks at rest after being correctly adjusted to the upper jaw with the help of already previously



**Figures 1 and 2** Lower protrusion of a high degree before and after treatment by setting back of the lower jaw.



**Figures 3 and 4** Profile of intense lower protrusion and teleradiograph of this case.

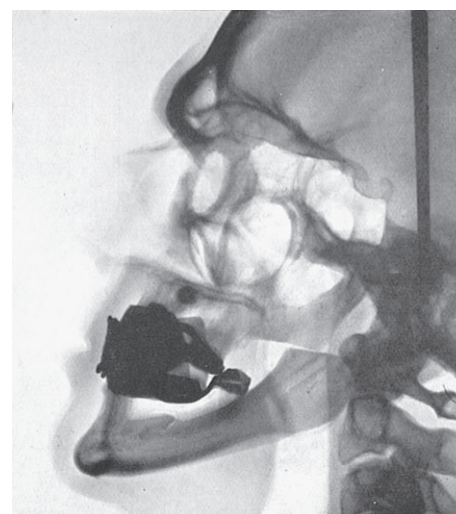
affixed intraoral splints. The operative setting-back of the protruded lower jaw, according to Lindemann, has now been performed in the 'Westdeutsche Kieferklinik' on more than 300 cases, and not only with a functionally and anatomically satisfactory results, but mostly also with rather baffling cosmetic results both for the patient and his relatives.

Such surprising and quickly achieved results seem to justify in every way the question, if it is not more appropriate to treat the lower protrusion after all only surgically, already in view of the short period of treatment lasting 6 to 8 weeks, in comparison to the loss of time experienced with a purely orthodontic procedure lasting 1 to 3 years, and the economical advantages resulted hereby.

A decision of this question can naturally not be brought about by a consideration of temporal or financial sacrifices demanded by the respective method of treatment. On the contrary, just with the treatment of the lower protrusion, it is of great importance to observe certain rules, as elaborated from orthodontic and surgical procedures in the course of observation of long standing comprising more than a decade, when a permanent success is to be expected. The value of these rules, originated from this jointly performed paper, attains a still greater significance, as the work was built up by mutual endeavours based upon hardly greater and longer experiences than those at the disposal of Professor Korkhaus with regard to orthodontics, and by the 'Westdeutsche Kieferklinik' regarding surgical treatment.

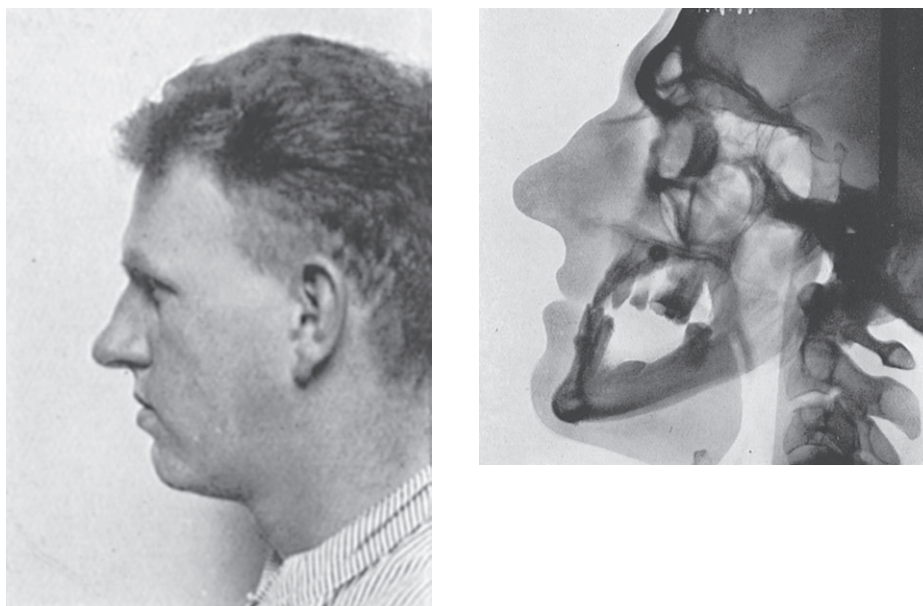
Just as already Dumm (1937) and Korkhaus (1937) have exactly denied the indicatory limits for orthodontic treatment, so I wish to follow suit in limiting the surgical possibilities. As basic rule the following may prove valid.

The severing of the lower jaw should remain limited to the fully developed state of lower protrusion with adults, where it has proved no more successful, contrary to the treatment of juveniles, to bring about a gradual transformation



**Figure 5** Setting back of lower jaw after severing at the mounting branch. Teleradiograph.

of the lower jaw in its joint and angle by retraction of the mandible and a protraction of the upper front. To this group belong above all those cases of highly developed lower protrusion, where the excessive growth of the considerably and massively developed jaw body is concerned. To achieve permanent success, the age of the patient is of great importance. According to our experiences, juveniles whose growth of bones has not attained its final state should be excluded from surgical treatment, if not special reasons are considered cogent. In many cases we have observed that in spite of a good adjustment of the jaw and despite the good retention of the upper jaw a relapse, if also to a minor degree, occurred already after a relative short time. That the termination of the growth of bones is of an essential importance to the final success of the operation could, on the other hand, be easily ascertained by the result attained



**Figures 6 and 7** Profile photograph and teleradiograph of the case after operation and healing process.

when operating on older persons. So for instance, no difficulties were experienced with a 60-year-old person whose lower jaw had to be set back owing to unfavourable static conditions for a false set of teeth, although the retention by the prostheses could hardly be considered sufficient.

If also in these cases the retention of the set-back lower jaw was of no decisive importance for the final result, by virtue of the already progressed inactivity and atrophy of the chewing muscles due to age, one has to attribute in general a decisive significance to the retention. As Neuhauser (Westdeutsche Kieferklinik) could prove, on radiographs, the muscoli masseter and pterygoides internus experience by the setting-back of the lower jaw, not only a considerable change in their direction of pull, but, above all, an expansion representing nearly 2 per cent of their original length. The herewith connected raising of the reflectory muscle tonus can only be compensated by an intensively effective retention, in order to avoid a relapse. Mechanical arrests with the help of sliding pikes or gliding devices cannot be applied here for any length of time, but a natural retention caused by the occlusion must be brought about. Out of these reasons an orthodontic preliminary and after treatment, prosthetic measures, respectively will have to be adopted in the majority of these cases. Preliminary examinations on the model aided by teleradiographs are irremissible for the setting-up of the entire plan of treatment and its correct execution.

Following the operative setting-back of the lower jaw it appears not seldom advisable to reduce and to round-off the strongly protruding, long and massive chin, so typical for

the lower protrusion, especially when developed on a 'rickety' basis. By a small operation this cosmetic completion can be attained without further difficulties. Starting from the fold of the lower jaw, the arch-shaped cut lies directly in the fold of the skin below the chin, the edge of the lower chin is laid open and reduced respectively. After careful stitching, no scar will be visible later on.

To go into details with regard to further methods of operating cases of lower protrusion I have to deny myself owing to the limits of this short paper. These procedures show also in general, considerable disadvantages in comparison to the basic and most practised operating procedure according to Lindemann. Partly, not to be avoided, visible scars are left (Wassmund, Kostecka, Perthes-Schlossmann, versus Eiselsberg-Pichler), partly, functional disturbances have to be taken into the bargain (Berger, Dufour-mentel), partly, the danger of an infection at the severing places threatens by the intraoral advancing (Ernst), thus discouraging the operating surgeon. These methods are therefore reserved for principally cosmetic operations, considered also as such by the patient, who only calls upon the surgeon for this sole reason. Thus these procedures are offering no further advantages.

## References

- Dumm H 1937 Treatment of lower protrusion (Class III). 1. The early treatment of lower protrusion of the temporary dentition. Transactions of the European Orthodontic Society, pp. 59–72
- Korkhaus G 1937 II. The late treatment of lower protrusion in the permanent dentition (Class III, Angle). Transactions of the European Orthodontic Society, pp. 73–90