Bilateral sagittal split osteotomy vs mandibular distraction osteogenesis

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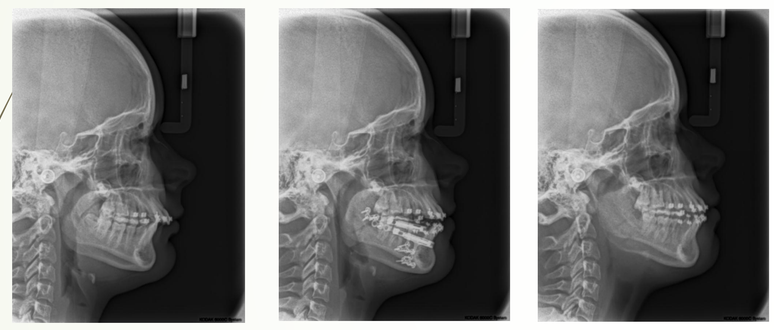
Objective:

The purpose of this study is to compare the results of cephalometric analysis regarding 12 patients, who undergone mandibular distraction osteogenesis (MDO) and bilateral split osteotomy (BSSO) at University Children's Hospital in Olsztyn, Poland between 2011 and 2012; performed by the same surgeon (KD). In both groups any concomitant procedures, including maxillary osteotomy or genioplasty, were done if indicated.

Materials:

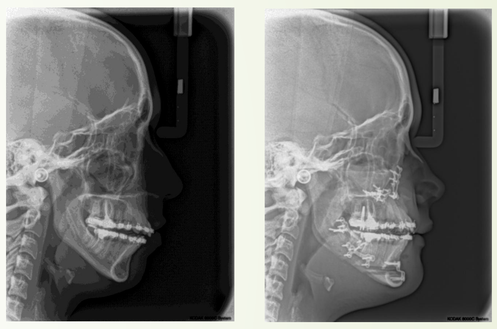
- The sample consisted of 27 lateral cephalometric x-rays. The mean age of the subjects was 17,9 years (MDO 15,5; BSSO 20).
- Criteria for cephalometric comparison were angular and linear cephalometric variables: WITS, SNB, ANB, SNMe,SNGn,SNPog,SN/GoGn, ANS-PNS/GoGn, Occl/GoGn, ArGoGn (Steiner analysis with modifications)
- The criteria for inclusion into this study were as follows: males and females with skeletal Class II pattern plus maxillofacial and dental abnormalities like skeletal open bite.

Mandibular distraction



Patient: Karolewska

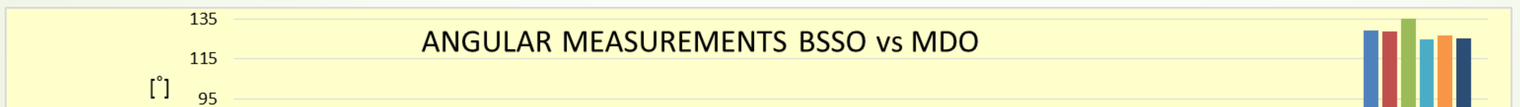
Bilateral sagittal split osteotomy



Patient: Kosińska

Methods:

All radiographs were hand traced by 1 examiner twice. In both groups cephalograms were taken 1) preoperattively (BSSO 7, MDO 5) 2)postoperatively (BSSO 7) 3) post-distraction (MDO 5) 4) post genioplasty (BSSO 2, MDO 1). The reliability test (paired Student t-test with a significance level of P<.05) and error analysis test (Dahlberg formula) from the two sets of measurements were performed.



	SNB	ANB	SNMe	SNGn	SNPog	SN/GoGn	ANS-PNS/GoGn	Occl/GoGn	ArGoGn
pre BSSO	74,03	5,43	72,63	74	75,2	44,32	33,78	26,64	129,5
post BSSO	76,6	3,49	77,28	77,57	79,46	42,5	32,57	23,35	129,07
post genio BSSO	74,5	3,12	75,62	76,5	78,87	50	44	31	138,5
pre MDO	78,1	3,3	76,3	78,25	79,25	34,2	25,4	20,3	124,7
post MDO	79,92	2,28	77,95	79,5	81,2	37,5	28,45	21,9	127
post genio MDO	78	-3	77	79,5	80	32	24,5	20	125,5

	WITS
pre BSSO	5,2
post BSSO	3,6
post genio BSSO	3,8
pre MDO	7,56
post MDO	1,91
post genio MDO	0,5

Results:

Results of this study showed that there was no statistically significant difference between the post-operative results of both methods. The moderate increase of SNB, SNPog, SNMe, SNGn angles and the decrease of ANB in two groups were comparable. Statistically significant difference was found post genioplasty in both groups – WITS, ANS-PNS/GoGn and Occl/GoGn (P<.05).

Conclusions:

Our comparison study showed that it was no statistically significant difference between results of BSSO postoperatively and MDO post-distraction . However, there is a need of long-term data on stability of both methods, what authors are planning to manage. The difference in age distribution was significant — patients in MDO group were younger. It shows that MDO may offer another option for treatment of skeletal Class II malocclusions in growing children.