Effect of surgical treatment for temporomandibular disorders

This is an excerpt from the full technical report, which is written in Norwegian.

The excerpt provides the report's main messages in English.

No. 02–2013

Systematic reviews

kunnskapssenteret

Title	Effect of surgical treatment for temporomandibular disorders
Norwegian title	Effekt av kirurgisk behandling for personer med temporomandibulær dysfunksjon
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ISBN	978-82-8121-515-3
ISSN	1890-1298
Report	No. 2 – 2013
Project number	716
Type of report	Systematic reviews
No. of pages	47 (80 incl. attachments)
Client	The Norwegian Directorate of Health
Subject heading (MeSH)	Temporomandibular Joint Disorders; Temporomandibular Joint; Craniomandibular Disorders; Hemostasis, Surgical
Keywords	TMD
Citation	Strøm V, Dalsbø TK, Lund Håheim L, Kirkhei I, Reinar LM. Effect of surgical treatment for temporomandibular disorders. Report from Kunnskapssenteret no. 2–2013. Oslo: Norwegian Knowledge Centre for the Health Services, 2013.

Norwegian Knowledge Centre for the Health Services summarizes and disseminates evidence concerning the effect of treatments, methods, and interventions in health services, in addition to monitoring health service quality. Our goal is to support good decision making in order to provide patients in Norway with the best possible care. The Centre is organized under The Norwegian Directorate for Health, but is scientifically and professionally independent. The Centre has no authority to develop health policy or responsibility to implement policies.

We would like to thank all contributers for their expertise in this project. Norwegian Knowledge Centre for the Health Services assumes final responsibility for the content of this report.

Norwegian Knowledge Centre for the Health Services
Oslo, January 2013

Key messages (English)

Background

Temporomandibular disorder (TMD) is a term used to describe a number of related disorders affecting the temporomandibular joints, masticatory muscles, and associated structures. The prevalence of TMD signs and symptoms is relatively high, but resolves spontaneously in most cases. For those where pain becomes substantial and the limitation of function severe enough to interfere with activities of daily living, treatment is required.

The aim of this systematic review is to assess the effectiveness of surgical treatment (arthrocentesis, arthroscopy and open surgery) compared to nonsurgical treatment for the outcomes of pain and mandibular function in people with TMD. The findings are based on results from five randomised controlled trials and nine controlled cohort studies, comprising 899 participants, mostly women (85 %).

Main findings

- The differences in pain and maximum mouth opening between the surgical and nonsurgical treatment options were minimal and probably not clinically relevant.
- Artrocentesis and open surgery might have some effect compared to nonsurgical treatment in terms of pain.
- Arthroscopy seems to have no better effect in terms of pain and possibly less effect on maximum mouth opening than nonsurgical treatment.
- The quality of the evidence is low or very low for all comparisons made. We thus lack documentation of sufficient quality to draw firm conclusions about the effectiveness of surgical treatment of TMD compared to nonsurgical treatment.

Title:
Effect of surgical treatment for temporomandibular disorders

Type of publication:

Systematic review

A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies.

Doesn't answer everything:

- Excludes studies that fall outside of the inclusion criteria
- No health economic evaluation
- No recommendations

Publisher:

Norwegian Knowledge Centre for the Health Services

Updated:

Last search for studies: May, 2012.

Executive summary (English)

Background

The Norwegian Directorate of Health has requested the Knowledge Centre to summarize evidence addressing the effectiveness of surgical treatment for people with temporomandibular joint disorders (TMD) compared to nonsurgical treatment for the outcomes of pain and mandibular functionality. Only studies comparing surgical treatment to nonsurgical treatment or no treatment are included. Studies only comparing different surgical methods are thus not included.

Temporomandibular joint disorder is a collective term used to describe a number of related disorders affecting the temporomandibular joints, masticatory muscles, and associated structures. The most common signs and symptoms include facial and jaw pain which can be aggravated by jaw movements, TMD joint noises (clicking or crepitus), and restriction of mandibular movements. The prevalence of TMD signs and symptoms is relatively high, but in most cases resolved spontaneously. Treatment is required for those cases where pain becomes substantial and the limitation of function severe enough to interfere with activities of daily living. Treatment options are divided into nonsurgical methods and surgical interventions. Surgical treatment options often used are open surgery, as discectomy and arthroplasthy, or closed surgery like arthroscopy and arthrocentesis. The effectiveness of surgical treatment for TMD compared to nonsurgical treatment is, however, uncertain.

Method

We searched systematically for research literature in the following electronic databases; Cochrane Central, EMBASE, ISI Web of knowledge, MEDLINE og Pub MED, until 14th of May 2012. We searched for literature with the following inclusion criteria (PICOS): (P) Persons diagnosed with temporomandibular joint disorders (TMD), (I) surgical treatment, (C) comparison made to nonsurgical treatment, (O) outcomes of pain and mandibular temporomandibular joint function, and (S) the following study design used: randomised controlled trials (RCT), quasi-randomised controlled trials, case control studies or controlled cohort studies.

Titles and abstracts of identified studies were assessed independently by three reviewers to judge if the studies matched the inclusion criteria. Included studies were read in full-text and reassessed according to the inclusion criteria. The same three reviewers made independent assessments of risk of bias in the included studies. Check lists were used for this purpose.

We summarised the results in text, tables and meta-analyses, separately for the surgical treatment options (arthrocentesis, arthroscopy and open surgery) for each of the outcome measures (pain and maximum mouth opening), and separately for randomised trials and cohort studies, respectively. The quality of the evidence for each outcome was assessed using GRADE.

Results

The literature search identified 1391 unique references. After assessment of titles, abstracts, and full-texts, we included 14 studies; 4 randomised controlled studies, 1 quasi-randomised trial, 6 prospective and 3 retrospective controlled cohort studies. These were published from 1991 until 2009, comprising totally 899 participants (85% women), with a mean age of 33 years, ranging from 11-73 years, and mostly diagnosed with internal derangement, disc displacement with or without reduction. The surgical modalities mostly used were arthrocentesis, arthroscopy and open surgery. Comparisons were mainly done to stabilisation splint therapy. The reported outcomes were pain intensity (at 100 mm visual analogue scale) and maximum range of motion during mouth opening. Our assessments of the included studies revealed that 13 out of 14 studies were at high risk of bias.

The summarised results exhibited a statistically significant effect both in terms of pain and maximum mouth opening in favour of arthrocentesis compared to nonsurgical treatment. For arthroscopy no statistically significant differences in the pain outcome were found compared to nonsurgical treatment, while the effect of maximum mouth opening was in favour of nonsurgical treatment. For the open surgery modalities, two RCT-studies exhibited a statistically significant effect on pain compared to nonsurgical treatment. For maximum mouth opening one small study found effect in favour of nonsurgical treatment, while one cohort study was contradictory.

The quality of the evidence, for both the pain and function outcomes and regardless of treatment modalities, was low or very low, and was downgraded mainly due to few included studies, a small number of participants and high risk of bias in the included studies.

Discussion

The differences between the surgical- and nonsurgical groups in the summarised results for both the pain and function outcomes are very small, and probably not clinically important. The results should be interpreted with great caution as these are based on few studies with low quality, and with high risk of bias.

Conclusion

The summarised results in this systematic review indicates:

- That the differences in pain and maximum mouth opening between the surgical and nonsurgical treatment options were minimal and probably not clinically relevant.
- That artrocentesis might have some effect compared to nonsurgical treatment both in terms of pain and maximum mouth opening. The quality of the evidence is however low or very low, thus to draw firm conclusions about the real effect is difficult.
- That arthroscopy have no better effect in terms of pain and possibly less effect on maximum mouth opening than nonsurgical treatment. The quality of the evidence is low or very low, thus to draw firm conclusions about the real effect is difficult.
- That open surgery might have some effect compared to nonsurgical treatment in terms of pain, but uncertain effect on maximum mouth opening. The quality of the evidence is low or very low, thus to draw firm conclusions about the real effect is difficult.

This systematic review highlights the necessity for more randomised controlled trials of sufficient quality to be conducted in order to be able to draw firm conclusions about the effectiveness of surgical treatment of TMD compared to nonsurgical treatment.