Cervical anterior discectomy (CAD) was introduced by Smith and Robinson, and Cloward, in 1958. They described the anterior approach to the cervical disc. After removal of the disc and herniated part an autograft taken from the iliac crest was introduced in the intervertebral space to promote fusion between the two adjacent vertebral bodies. The introduction of a microscope facilitated the procedure enormously. At this time the main reason for performing a CAD is still degeneration of the disc with signs and symptoms due to compression of the nerve root and/or spinal cord by a herniated disc or spondyloytic spurs.

Nowadays, various kinds of CAD are distinguished depending upon the implant that is used to fill the intervertebral space. A discectomy can be performed solely without introducing any implant in the intervertebral space (CAD). If an implant is used with the intent of fusing the adjacent vertebral bodies it is called in literature a cervical anterior discectomy with fusion (CADF). Recently, prostheses have been used in order to maintain mobility at the operated segment. A standard abbreviation has not been used yet, but for this review we will use CADP. The advantages and disadvantages of each of the procedures will be addressed below.

CAD was described by Hirsch in 1960. Through an anterior approach the cervical disc was removed as were the compressing factors on the nerve root or spinal cord, such as herniated disc or accompanying spondyloytic spurs. Since the intervertebral space will collapse after removal of the disc an adequate decompression of the exiting nerve roots should be achieved.

In the case of CADF an implant is used. Various implants can be used, ranging from autograft – most frequently obtained from the iliac crest – allograft, cages filled with bone (auto- or allograft) or biomaterials, or polymethylmethacrylate (PMMA) bone cement. PMMA is used as a spacer without the intention of promoting fusion, but eventually fusion occurs around the PMMA. After performing a thorough discectomy the implant is introduced. The disc space is slightly overdistracted. This manoeuvre will increase the height of the neuroforamina.

The use of a plate as an adjunct to CADF is still subject of discussion. It has been proven that for one- or two-level CADF, a plate does not have any advantage and is considered not to be useful.

Recently, arthroplasty has been introduced. The theoretical advantages of CADP are, in the first instance, providing at least as good clinical results as CADF. Furthermore, prostheses maintain mobility and could prevent the occurrence of degeneration of the adjacent segment (adjacent disc degeneration [ADD]). There is no benefit relating to the clinical result.

The existence of ADD is subject to debate. The proponents of arthroplasty frequently cite the article by Hilibrand, in which he reported an annual rate of ADD after fusion of 2.9 % after 10 years of follow-up. However, correction for the patients lost to follow-up and pre-existing degeneration of the adjacent segment decreased the annual rate to 0.4 %. Furthermore, recent studies in asymptomatic volunteers disclosed that degeneration of initially normal discs and progression of existing degeneration is a natural phenomenon. Therefore, it can be questioned whether ADD is really induced by fusion of a segment or is a natural phenomenon. Finally, it is remarkable that ADD was not a subject in many of the recently published results of randomised clinical trials (RCTs) comparing arthroplasty with CADF. From the available studies a benefit for arthroplasty in relation to the prevention of ADD has not been proven.

The results for each procedure relating to relief of arm and/or neck pain are within the same range. Over 75 % of patients have a

Abstract
Cervical anterior discectomy was introduced in the late 1950s. The main indication was radicular symptoms due to cervical degenerative disc disease. The results for this straightforward procedure are in most instances excellent. An overview is given of current anterior surgical possibilities including the necessity of implants. Attention is also given to possible future developments.

Keywords
Surgery, anterior cervical discectomy, degeneration, intervertebral disc, outcome

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Anterior Cervical Discectomy

In conclusion, CAD is a safe procedure with a good-to-excellent result in most cases. The debate whether to fuse or not, and if fusion is the goal, which implant should be applied is still not closed. Before developing fancy new implants, a definitive answer to the question of CAD with or without fusion should be provided. A large RCT on this subject with the participation of several centres in Europe would probably solve this question. The available literature is at this time certainly not in favour of cervical arthroplasty. I doubt whether based on recent investigations this will change, since a thorough review by independent epidemiologists will certainly reveal many biases and flaws.