

Long Term Reoperation Rates (RR) of Anterior Cervical Discectomy and Fusion (ACDF) Procedure for Degenerative Disc Disease (DDD). A Retrospective Review Study at University of Buffalo.

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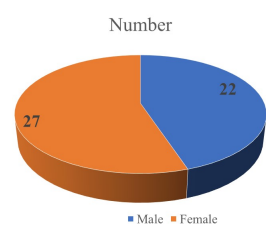
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Introduction

Anterior Cervical Discectomy and Fusion (ACDF) is one of the most commonly performed procedures for the treatment of Degenerative Disc Disease (DDD) in the cervical spine (1). Reoperation Rate (RR) is a useful marker of the procedure's efficacy and safety during time (2). Aim of this current study was to define RR of ACDF procedure in our institution and to recognize possible contributing factors.

Methods

A retrospective study was conducted from January 2005 to January 2016 after obtaining Institutional Board Review (IRB). We included adults that were re-operated after ACDFs performed at our institution for DDD. The recorded parameters were patients' demographics, medical history, levels of surgery, BMI, smoking status, timing and etiology of reoperation. Patients with fractures and tumors were excluded from our study.



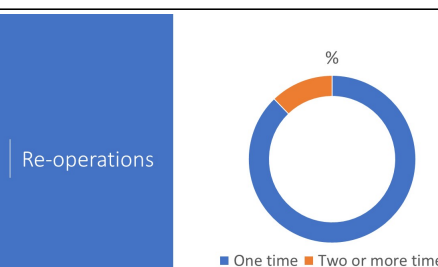
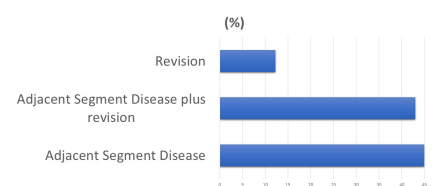
Results

One thousand and sixty six charts were reviewed. Forty-nine patients were finally included in this study (27 female). The mean age was 50.7±9.4 years old (range: 32-76). 42.9% of the patients were smokers and 28.6% former smokers. The mean BMI was 31.1±6.4 (range: 19.2-46.9). The mean timing of reoperation after the initial procedure was 34.7±25.1 months (range: 3 days-120 months). Only 6 patients were re-operated two or more times (12.2%). The overall RR was 4.6%. 44.9% of the patients were operated for Adjacent Segment Disease (ASD). 42.9% of the patients were operated for ASD combined with revision of the previous operated level/levels while 12.2% of the patients were revisions of the previous operated levels. The majority of the reoperations were noted at the lower cervical spine (93.9%). 57.1% of the patients were having medical history associated with steroids uptake (34.7%, p<0.05), diabetes mellitus (12.2%, p<0.05), and osteoarthritis-osteoporosis (10.2%, p<0.05).

Summary Statistics of Continuous Variables Classified by Reoperation and p-values

| Group | N | Mean | Std Dev | Median | Minimum | Maximum | p-value |
|-------|----------|------|---------|--------|---------|---------|---------|
| Age | Reop | 49 | 50.7 | 9.4 | 50.2 | 37.00 | 0.3468 |
| | Non-reop | 1017 | 50.8 | 9.8 | 49.6 | 31.00 | |
| BMI | Reop | 49 | 31.1 | 6.4 | 30.5 | 19.20 | 0.3759 |
| | Non-reop | 1017 | 32.7 | 5.9 | 29.5 | 18.00 | |

Reoperations



Contingency Table and p-values of Categorical Variables

| Variable | Group | Group | | p-value |
|---------------------------|--------|--------------|-----------|---------|
| | | Non-Reop (%) | Reop (%) | |
| Gender | Female | 555 (54.6) | 27 (55.1) | 0.75 |
| | Male | 462 (45.4) | 22 (44.9) | |
| diabetes | No | 995 (97.8) | 43 (87.8) | <0.05 |
| | Yes | 22 (2.2) | 6 (12.2) | |
| osteoarthritis/rheumatoid | No | 1002 (98.5) | 44 (89.8) | <0.05 |
| | Yes | 15 (1.5) | 5 (10.2) | |
| Steroids uptake | No | 865 (85.1) | 32 (65.3) | <0.05 |
| | Yes | 152 (14.9) | 17 (34.7) | |

Conclusions

ACDF is a safe procedure with low long term RR usually noted at the lower cervical spine. It seems that elevated BMI, smoking and past medical history increase the risk for a reoperation in the cervical spine after ACDF procedure.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) discuss about possible etiological factors of re-operations after ACDF procedure, 2) identify the role of patients selection for the specific procedure based on the presented data.

References

1. Anterior cervical discectomy and fusion associated complications. Fountas KN, Kapsalaki EZ, Nikolakakos LG, Smisson HF, Johnston KW, Grigorian AA, Lee GP, Robinson JS Jr. Spine (Phila Pa 1976). 2007 Oct 1;32(21):2310-7. Review.
2. Early and late re-operations after anterior cervical decompression and fusion during an 11-year follow-up. Saarinen T, Niemelä M, Kivisaari R, Pitkäniemi J, Pohjola J, Hernesniemi J. Acta Neurochir (Wien). 2013 Feb;155(2):285-91; discussion 291. doi: 10.1007/s00701-012-1563-2. Epub 2012 Nov 28.