Interobserver Agreement in the Interpretation of Correct Application of Cervical Orthosis after Cervical Fusion

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Introduction

The Effectiveness of external cervical orthosis depends on correct collar application. Data on correct cervical collar application is lacking. We sought to measure the level of agreement in interpretation of correct collar application between cervical fusion patients and trained observers.

Methods

We prospectively interviewed consecutive patients who underwent anterior/posterior cervical fusion in two hospitals with multiple surgeons at their 2-9 weeks' postoperative visits from 2/1-8/1/2017. We excluded personal injuries or patients <18-year-old. Patients and trained raters both evaluated the correct application of the Vista cervical collar simultaneously using a cloud-based and secured questionnaire with a 4-point ordinal scale (Fig.1). Patients were blinded to the assessment by raters. Patient and raters evaluated the collar application once. Raters were selected randomly from departmental researchers who were trained using a standardized Vista collar training video produced by Aspen Medical Products. Patients were verbally trained by the nurses/residents on discharge. Assuming null hypothesis with an Intraclass correlation (ICC)

Results

One hundred sixty-two collar applications were evaluated by the patients themselves and 8 trained raters. There was no replicate observation. Patient characteristics were presented in table 1. There were 120 (75%, 95% CI 0.68-0.8) concordant pairs. The single measure ICC was 0.48 (95%CI, 0.35-0.59, P<0.0005).

Conclusions

Our data demonstrated poor agreement between trained observers and patients regarding correct collar application. To accurately evaluate the effect of external cervical orthosis on cervical fusion, the collar needs to be applied correctly. Standardized orthosis application training is recommended.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the interobserver agreement on correct use of external cervical orthosis

References

Kottner J, Audigé L, Brorson S, Donner A, Gajewski BJ, Hróbjartsson A, Roberts C, Shoukri M, Streiner DL. Guidelines for Reporting Reliability and Agreement Studies (GRRAS) were proposed. J Clin Epidemiol. 2011 Jan;64(1):96-106. PubMed PMID: 21130355.

Koo TK, Li MY. A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. Journal of Chiropractic Medicine. 2016;15(2):155-163.

Computing Intraclass Correlations (ICC) as Estimates of Interrater Reliability in SPSS. http://neoacademic.com/2011/11/16/computing-intraclass-correlations-icc-as-estimates-of-interrater-reliability-in-spss/

Intraclass correlation coefficient. https://www.medcalc.org/manual/intraclasscorrelation.php

Vista collar demonstration video. https://youtu.be/jgxv4L9CZbg

Table 1. Patient Characteristics

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N=162	n/%
Male	91/56.2%
ACDF	118/72.8%
>3 levels	61/37.7%
Sx-interview interval (d)	20.5±10.6

Table 1. Patient Characteristics

Figure 1. Collar Agreement Survey

4. When you wear your collar, how often is it snug enough that it will restrict any head turning or bending?
- Do not wear collar
- Never snug
- Sometimes snug
- Always snug

5. To be answered by the researchers: Have the patient put on the collar or observe the way the collar is on the patients, determine how snug the collar is. Remind the patient to put the collar on the normal way. Skip question if patient does not come with collar or admit that they are not wearing the collar.
- Snug as appropriate
- Somewhat snug
- Not snug at all
- Do not wear collar

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