Comparison of three pain scales after impacted third molar surgery

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Objective. Recently, a pain assessment scale called “full cup test” (FCT) has been suggested for pain evaluation. It is claimed to be easier to use for the patient, and it allows using parametric tests for statistical analyses. The aim of this study was to evaluate the validity of the FCT in third molar surgery.

Study design. The FCT was compared with 2 well accepted pain scales. Forty-eight patients who had fully impacted lower third molars were included. All patients were asked to fill 3 pain scales—visual analog scale (VAS), verbal rating scale (VRS), and FCT—daily during the first postoperative week. Then the scales were collected and data statistically analyzed. Agreement among VAS, VRS, and FCT was evaluated using the Spearman rank coefficient.

Results. Correlations among 3 scales were very high and significant (P < .001).

Conclusions. The FCT can be used to assess the postoperative pain after third molar surgery. (Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011;112:715-718)

Surgical removal of impacted third molars is a common oral surgery procedure. It can be quite discomforting for the patients because of postoperative complications, such as bleeding, pain, swelling, trismus, and alveolar osteitis. Among those complications, pain has probably the utmost importance for the patient, and pain intensity is thought to be one of the primary factors that influence the sense of well-being.

Pain is a subjective complex experience, and there is not any tool to measure it objectively. Usually unidimensional scales, which measure only the sensory component of the pain, are used in pain research. Although many pain assessment scales exist, there is not a standardized definition for each scale. The visual analog scale (VAS), the verbal rating scale (VRS), and the numeric pain scale (NRS) are the best known and most commonly preferred scales. All of them were shown to be valid and they have different advantages and disadvantages. For example, VRS is easy to understand for the patients and can be remotely applied by mail or by phone. However, its sensitivity is low and it does not allow using parametric tests. VAS allows the use of parametric tests and is therefore widely used in scientific papers, but it has more practical difficulties than VRS or NRS.

There are also other less frequently used pain assessment methods, such as faces pain scale and color analog scale. Recently, another pain scale, called “full cup test” (FCT), has been suggested to establish a self-reported pain evaluation. It is claimed to be easy to understand for the patient and it allows using parametric tests that are more powerful for statistical analyses.

The aim of the present study was to evaluate the validity of FCT in postoperative pain research in third molar surgery by comparing it with 2 well accepted pain scales, VAS and VRS.

MATERIALS AND METHODS

The study was approved by the Ethical Committee of the Selcuk University Faculty of Dentistry. Forty-eight patients (17 men, 31 women, aged 17-27 years, mean age 21.9 ± 3.1 years) who had fully impacted lower third molars were included to the study. Because the education levels of the patients could affect the use of pain scales and the outcomes, the patients were selected from a similar education level. The surgical procedures were performed under local anesthesia in usual way. After the operations, the patients were given a form containing the pain scales, which would be completed daily for 6 postoperative days, including the day of surgery. The patients were fully informed about the scales, and a written explanation was also provided.

The form contained 3 pain scales: VAS, VRS, and FCT (Fig. 1). The VAS was a simple 10-cm horizontal line with word anchors of “no pain” at the left end and “the worst pain imaginable” at the right end. The patient would simply place a mark anywhere on the horizontal line. The VRS consisted of 4 verbal expres-
sessions (0: no pain; 1: mild pain; 2: moderate pain; and 3: severe pain) which would be selected by the patient. The FCT was a simple “cup” drawing as described by Ergün et al. The patients were told that the “cup” was completely full if their pain was the most severe and empty if they had no pain at all. The patients were asked to draw a horizontal line in the cup to indicate the pain level, as if the pain “filled the cup”. FCT scores were calculated as height of line/height of cup x 100.

The patients were asked to mark the pain scales daily, and they were invited for removing the sutures and for examining the surgical wound in the postoperative seventh day. The forms were then collected, and data were analyzed using a statistical software package (Sigmastat version 3.5, Systat Software, Richmond, CA). Agreement among VAS, VRS, and FCT was evaluated using the Spearman rank coefficient. The patients were also asked which pain scale they found more comprehensible and easier to use.

RESULTS

None of the patients had serious surgical complications, and all patients completed the forms. Correlations among the 3 scales were very high (Table I) and significant (P < .001; Figs. 2-4). The most preferred pain scale was VRS in 20 patients (41.7%), FCT in 17 patients (35.4%), and VAS in 11 patients (22.9%).

DISCUSSION

Pain measurement tools, i.e., pain scales, have been an important part of pain research, and many pain scales have been developed. For a pain measurement instrument to be useful and valid, it must be easily understood and used by the subject, and it should compare well with other established methods of assessing pain. The validity of any pain measurement scale cannot be determined directly. One aspect of validity is a scale’s agreement with another recognized measurement scale. Another suggested method of assessing validity is by the response of the scale to pharmacologic...
pain interventions. Additionally, the measuring device should yield repeatable and reliable results.\textsuperscript{11} The VRS consists of a list of adjectives describing the pain intensity. An acceptable VRS should include adjectives that describe the extremes of the dimension.\textsuperscript{12} It may range from simple 4-point scales\textsuperscript{13} to 15-point ratio scales.\textsuperscript{14} The main advantage of VRS is that patients appear to prefer the VRS to the VAS, finding it easier to use.\textsuperscript{3} Our results support this: 41.7\% of the patients expressed the VRS as the easiest-to-use pain assessment scale. However, VRSs separate the pain into categories, which means that the intervals between each category cannot be assumed to be equal, i.e., the data are ordinal. That limits the statistical analysis to nonparametric methods.\textsuperscript{3} Because of the fixed number of response categories, VRS is considered to be less sensitive than VAS.\textsuperscript{15} However, sensitivity is dependent on the number of adjectives used. A scale with >11 items is likely to be as sensitive as VAS.\textsuperscript{16} Patients are also required to select from a finite number of descriptors and they may feel that they lie between 2 categories. For that reason, some authors hesitate to recommend VRS as the sole method of in pain studies.\textsuperscript{12} The VAS is usually presented as a 10-cm line, anchored by verbal descriptors, and the patient is asked to mark the pain intensity on that line.\textsuperscript{7} One limitation of VAS is that it must be marked by the patient himself, and that is a problem in physically impeded people. Additionally, VAS requires the patient to be able to equate the length of the line with the amount of pain they are experiencing. That makes VAS conceptually complex and that may be a serious concern in elderly or mentally ill subjects.\textsuperscript{3} The main benefit of the VAS over the VRS is that if the data are normally distributed, parametric statistics can be applied.\textsuperscript{8} It has been demonstrated that both patients and physicians prefer the NRS or VRS over the VAS for the sake of simplicity.\textsuperscript{17} FCT, which is a newer self pain assessment tool, is claimed to have the advantages of VAS without its practical difficulties. The conceptual complexity of VAS has been eliminated by using the “cup” metaphor. Although we cannot make general and definite conclusions, FCT (35.4\%) was found to be more favorable over VAS (22.9\%) in our study. However, it also seems that VRS is still more preferable than FCT.

FCT does not need any numeric or word skills, and is easy to understand and to complete. Thus, it has been suggested to assess the pain in low-educated patients.\textsuperscript{5} As with VAS, the data obtained from FCT can be used for parametric tests.

CONCLUSIONS

VAS, VRS, and FCT all are valid pain assessment tools for the postoperative pain in third molar surgery. It may be suggested that the FCT is easier to use than the VAS, because it allows reflecting the pain in a more concrete manner.

REFERENCES


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