

Cold-knife conization versus the loop electrosurgical excision procedure for treatment of cervical dysplasia

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Summary

Introduction: Classical conization is a standard procedure for treatment of cervical lesions. Conization with loop diathermy is well established and lesions can be excised in more than 90% of cases. **Objective:** To compare two methods of conization for the treatment of cervical dysplasia. **Method:** The study included 172 patients who had conization for diagnosed cervical dysplasia. A retrospective analysis was conducted on incidence of complications and presence of dysplasia on the specimen edges after classical conization compared to conization with loop diathermy. The possibilities for analyzing specimen edges were reviewed. **Results:** A significantly higher incidence of complications was found among patients who underwent classical conization compared to those who had the loop diathermy procedure. The loop procedure is sufficient for treatment of cervical dysplasias. **Conclusion:** The authors suggest loop diathermy conization as the method of choice for treatment of cervical dysplasia.

Key words: Conization; Complications; Resection edges; Leep; Cold-knife.

Introduction

Cold-knife conization has been the standard procedure for treatment of cervical dysplasia (CIN). Significant changes have been made with the introduction of the loop electrosurgical excision procedure (LEEP) for treatment of cervical dysplasia since it is easily performed and the efficacy rate for complete excision of a lesion is 90% [1, 2].

Randomized studies have suggested that conization with LEEP is followed by fewer complications than cold-knife conization [3, 4].

There have been several reports regarding detection of residual disease on resection edges after a loop electrosurgical procedure and cold-knife conization as well. Results differed from different histopathology departments worldwide. The success in respect to identifying residual disease on resection edges depended mostly on whether an experienced pathologist performed the analysis. Detection of residual disease on resection edges is often difficult after a LEEP and an experienced and well trained pathologist is needed. Girardi *et al.* conducted a study on the possibilities of detection of residual disease on resection edges and concluded that there was no difference in interpretation of resection edges after conization with the LEEP compared to cold-knife conization [6]. Methevet and colleagues performed a study on the evaluation of resection edges and concluded that it was not sufficient in 31% of tissue specimens after a loop electrosurgical procedure [5]. If there is residual disease present on resection edges, repeat conization should be performed only if there is atypia on the cytology reports on follow-up examinations [5].

In this study we compared the incidence of complications after cold-knife conizations versus conizations with the LEEP. In addition we evaluated the histopathology reports to see if there was any difference in analyzing resection edges after the procedures.

Material and Method

A retrospective analysis of the histopathology and clinical reports of patients who underwent conization at the Institute of Gynecology and Obstetrics in Belgrade was carried out over two years. Patients included in the study were operated on for cervical dysplasia (CIN). Patients who had repeat conization for cervical dysplasia were excluded from the study. Data were obtained from medical reports and histopathology reports with detailed examination of cone specimen and resection edges. We compared the incidence of complications after cold-knife conizations (Stumdorf stitch) versus conizations with the LEEP. Incidence of intraoperative and postoperative complications was analyzed as well as presence of residual disease on resection edges after both the standard cold-knife conization and loop electrosurgical procedures.

Cold-knife conizations were performed as excision of the cone to a depth of 10 mm and application of Stumdorf stitches. Conizations with the LEEP were also performed to a depth of 10 mm with different diameters of loops (30 to 40 W), using ball electrodes for coagulation.

Classical conization was performed on 100 patients; 72 patients underwent the loop electrosurgical procedure. Histopathology reports were evaluated and data analyzed with the chi-square.

Results

All patients who were diagnosed with cervical dysplasia were surgically treated by conization of the cervix. Indications (degree of dysplasia) for each technique of conization are shown in Tables 1 and 2.

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Table 1. — Indications for cold-knife conization.

Indications	Number of patients	%
CIN I	7	7%
CIN II	13	13%
CIN III	80	80%
Total	100	100%

Table 2. — Indications for conization with the loop procedure.

Indications	Number of patients	%
CIN I	17	23.6%
CIN II	18	25%
CIN III	37	51.4%
Total	72	100%

All degrees of dysplasia were included in the indications for both types of conization. Cold-knife conization was more often the method of choice for high-degree dysplasia while the LEEP was used more often for low-degree dysplasia ($\chi^2 = 16.60$; $p = 0.001$).

Several complications were noted after cold-knife conizations including bleeding, infections and stenosis of the cervical canal (Table 3).

Table 3. — Incidence of complications.

Complications	Cold-knife conization	Loop electrosurgical excision procedure
Bleeding	4%	2.8%
Infection	3%	0
Cervical stenosis	2%	0
No complications	91%	97.2%
Total	100%	100%

After conization with the loop electrosurgical procedure 2.8% of patients experienced light bleeding. More complications were noted after cold-knife conizations compared to the LEEP but no statistical significance was found ($\chi^2 = 1.768$; $p = 0.184$).

Evaluation of resection edges from histology reports was completed for all patients and revealed differences in cold-knife conizations compared to loop electrosurgical procedures. In 8% of patients residual disease was found on the resection edges after cold-knife conizations compared to 13.9% after the LEEP.

There was no statistical significance in the incidence of residual disease on resection edges with respect to type of conization performed ($\chi^2 = 1.91$; $p = 0.27$).

All resection edges obtained with cold-knife conization could be analyzed, whereas three specimens obtained with the LEEP could not be evaluated due to the presence of residual disease caused by severe tissue damage (Table 4).

There was no statistical significance in the number of specimens that could have been analyzed after both types of conization performed ($\chi^2 = 2.15$; $p = 0.14$).

Cervical dysplasia was excised in a total of 92% of patients with standard cold-knife conization and in 82% of patients treated with the LEEP. There was no statistical significance when comparing the efficacy of cold-knife conization versus the LEEP for treatment of cervical dysplasia ($\chi^2 = 1.91$; $p = 0.27$).

Table 4. — Resection edges after standard conization and loop diathermy.

Resection edges	Cold-knife conization	Loop electrosurgical excision procedure
*Positive	8%	13.9%
**Negative	92%	82%
***Unclear	0	4.1%
Total	100%	100%

*positive: resection edges of cone with dysplastic changes.

**negative: resection edges of cone with no dysplastic changes.

***unclear: resection edges of the cone could not be analyzed for detection of dysplastic changes.

Discussion

Our experience has shown that both classical conization and the LEEP have been good choices for successful treatment of cervical dysplasia. At the Institute for Gynecology and Obstetrics in Belgrade standard cold-knife conization is still the preferred method of choice for treatment of severe cervical dysplasia, although the loop electrosurgical procedure is likely to be used for low-grade cervical dysplasia. This might be an explanation as to why resection edges after the LEEP have often been clear of residual disease. The complication rate in our experience is consistent with the data from the literature and it is significantly higher after cold-knife conization compared to the LEEP. Bleeding in patients after standard cold-knife conization was managed with application of surgical knots. There was no heavy bleeding after LEEP. Infections and cervical canal stenosis occurred after classical conizations, though no such problems were observed after loop procedures. Several studies have shown that incidence of cervical canal stenosis was dependent on depth of excised cervical tissue, and it was more often observed when cervical tissue was cut more than 20 mm in depth [2]. In our experience the excision depth of more than 20 mm only occurred in cones cut with cold knife, and that might be an explanation as to why stenosis was found after standard conizations and not after loop procedures. Randomized studies have confirmed that there are fewer complications after loop procedures compared to cold-knife conizations [4]. Several papers have reported that in more than 30% of cones obtained after loop electrosurgical procedures, resection edges could not be analyzed due to the presence of residual disease. Our experience has shown that the resection edges could not be interpreted in 4.1% of cones. Similar results have been found in different studies. Giacalone *et al.* stated that the resection edges could not be evaluated in 7% of cones after loop procedures [1]. In our experience 2.3% of cones could not be analyzed with respect to the resection edges after the LEEP. Several authors have suggested that the experience of the surgeon plays an important role in decreasing the damage of the cone specimen with the loop procedure. An experienced pathologist is important as well so that resection edges can be properly evaluated [2, 5, 8].

In our study total excision of the cervical dysplasia was obtained in 92% of patients treated with standard cold-knife conization compared to 82% who had conization with the loop procedure. There is no statistical difference in the efficacy of cold-knife conization versus loop procedures for treatment of cervical dysplasias.

Several authors have come out with similar results: total excision of cervical dysplasia in 90% of patients treated with standard cold-knife conization versus 80% of lesions totally excised with the loop electrosurgical excision procedure [5, 6]. They also noted that recurrences were not any more frequent after the loop procedure versus standard conization.

Conclusion

Conization with the loop electrosurgical excision procedure is efficient method for therapy of cervical dysplasia. Standard cold-knife conization is also the method of choice for successful treatment of cervical dysplasia, however more complications occur after cold-knife conization versus the loop procedure.

Conization with the loop electrosurgical procedure is easier to perform than standard cold-knife conization, the complication rate is lower, and it is as successful as standard conization in treating cervical dysplasias. Conization with the loop diathermy is well established and widely accepted. It also costs less and lesions can be totally excised in more than 90% of patients.

Conization with the loop procedure should be recommended for patients with cervical dysplasias.

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