ORIGINAL ARTICLE

Outpatient Procedures For Cervical Dysplasia: A 3 Year Review of Laser Vaporisation and LEEP

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Summary

A 3 year retrospective review (1995 to 1997) of 127 patients with cervical dysplasia who underwent Laser Vaporisation of the cervix and LEEP at the Gynaecological Cancer Centre, KK Women's & Children's Hospital, Singapore, was undertaken. Amongst the patients in the Laser Vaporisation group, the mean age was 37.7 years (SD 8.8), the mean operating time was 14.8 minutes (SD 8.5), 63.6% were given prophylactic antibiotics and the mean follow up period was 15.3 months (SD 12.0), whilst in the LEEP group, mean age was 40.3 years (SD 8.4), mean operating time, 11.8 minutes (SD 4.9), prophylactic antibiotic rate, 53.8% and mean follow up period was 19.1 months (SD 9.3). Mild and moderate haemorrhage post procedure were the only complications encountered, 10.2% (5/49) in the Laser group and 3.8% (3/78) in the LEEP group. 98% (48/49) and 97.4% (76/78) of the Laser and LEEP groups, respectively, were free of disease on follow up. None of the 3 patients with persistent or recurrent disease were diagnosed as having invasive cancer. Overall, there were no significant differences in the patient characteristics, histopathology, operating times, follow up period, the use of prophylactic antibiotics, and complications in the 2 groups.

The low complication rate, high disease-free rate and the relatively short operating time of Laser Vaporisation and LEEP in our study suggests that, indeed, both the procedures can be done safely and efficiently in the outpatient setting.

However the discrepancy between the histology of colposcopically directed biopsy and that of LEEP specimens suggests that colposcopically directed biopsy may not be as accurate as one might believe, and further studies analysing the concordance between colposcopically directed biopsy and LEEP biopsy histologies are needed.

Key Words: Cervical dysplasia, Laser vaporisation, LEEP, Patient characteristics, Histopathology, Operative time, Prophylactic antiobiotics, Complications, Discrepancy

Introduction

Although the incidence of invasive cervical carcinoma is decreasing world-wide, in Singapore, cervical cancer still remains the fourth commonest female cancer, behind cancers of the breast, colon/rectum and lung. It is widely acknowledged that invasive cervical carcinoma develop from pre-cancerous cervical dysplasias, and that screening by Papanicoloau smears and ablation of these precursors reduces the incidence and mortality from these cancers[2]. Although it has been suggested that up to 80%[3] of low grade dsyplasia regress, a significant

proportion will progress to higher grades of dysplasia and even invasive cancers, a fact which supports the practice of ablating or removing dysplastic tissue.

The carbon dioxide (CO_2) Laser has become the foremost tool for ablation in recent years, its efficiency and safety having been widely reported. The introduction of the Loop Electrosurgical Excision Procedure (LEEP) has offered the patient and physician the opportunity of obtaining a histopathological diagnosis on an outpatient basis. It is both a diagnostic and therapeutic procedure with low complication rates and high cure rates.

Both Laser Vaporisation and LEEP are therapeutic options available to the Gynaecologist faced with a patient presenting with cervical dysplasia. There have not been many studies comparing the efficacy and suitability for its use in the outpatient setting. The aim of our study is to review all cases of cervical dysplasia who had Laser Vaporisation and LEEP performed on them from 1995 to 1997, and to critically analyse them in an attempt to ascertain if, indeed, these procedures can be safely and effectively done in the outpatient setting.

Materials and Methods

In this retrospective study, all women who underwent laser vaporisation or LEEP, for cervical dysplasia diagnosed by colposcopically directed biopsy, between 1st January 1995 and 31st December 1997, were included.

Laser Vaporisations were done with the Surgilaser 50 machine. Power used was between 40 and 50 watts, depending on the operators' preferences, with operating mode of continuous. Destruction of a depth of 5 to 7mm with width of destruction between 4 to 5mm beyond visible lesion was generally made. The spot size of the Laser was between 1.5 to 2mm.

LEEP was performed with the LEEP-system 6000 machine. Power was set between 25 and 50 watts, depending on the loop size, which ranged from 1.0 x 1.0cm to 2.0 x 1.0cm. Mode of operation was blended cut or coagulated. The diameter of the loop was 0.2mm. Haemostasis was attained with either Ferric Subsulfate (Monsell solution) or roller-ball coagulation. Local anaesthesia was infiltrated into the cervix.

The use of prophylactic antiobiotics was not uniform and dependent on the gynaecologist. Amoxycillin (250mg tds) and metronidazole (200 mg tds) or Doxycycline 100 mg bd in combination with metronidazole (200 mg tds) for one week were the preferred antibiotics used.

All cases were reviewed, retrospectively, for patient characteristics, histopathology, operating time, follow up period, use of prophylactic antibiotics and complications and outcome.

All continuous data were expressed as mean. Student's test was used to compare means of different groups.

The X^2 (chi squared) test was used to compare proportions. Significance level was set at $p < 0.05$.

Results

There were a total of 127 patients in our review, 49 in the Laser Vaporisation group and 78 in the LEEP group. 116 (91.3%) were Chinese, 2 (1.6%) were Indians, 3 (2.4%) Malays and 6 (4.7%) were of other races.

Table I shows the Histopathological distribution of the 2 treatment groups. There was no significant difference in the distribution of histopathology between the 2 groups. The majority of the patients were either CIN I or CIN II. Only one patient in the Laser Vaporisation group had CIN III, a fact which is not entirely surprising since CIN III is usually treated by a cone biopsy. However, in this particular case, the colposcopy was performed by a senior consultant who was sure that there was no underlying microinvasion. In the LEEP group, there were 6 cases of CIN III diagnosed by colposcopic directed punch biopsy. Four of these patients were confirmed to have CIN III on LEEP biopsy histology. However, there was one who was found to have a microinvasive squamous cell carcinoma and the other, a well differentiated adenocarcinoma on LEEP biopsy histology. The latter patient had an extended hysterectomy scheduled for Stage 1A1 cervical cancer, but at laparotomy, the left obturator and

Table I
Histopathological Distribution

Histopathology	Laser Vaporisation (n = 49)	LEEP (n = 78)
HPV	3 (6.1%)	9 (11.5%)
CIN I	29 (59.2%)	31 (39.7%)
CIN II	14 (28.7%)	30 (38.5%)
CIN III	1 (2.0%)	6 (7.7%)
Cervicitis	2 (4.0%)	1 (1.3%)
Suspicious of invasion	0	1 (1.3%)
Total	49	78

HPV = *Human Papilloma Virus*
CIN = *Cervical Intraepithelial Neoplasia*
p value = 0.29, NS

paraaortic lymph nodes were found to be enlarged. The operation was abandoned and the patient underwent radiotherapy. The former patient underwent a vaginal hysterectomy. Both patients are still on follow up and are well.

There was another 58 year old patient whose colposcopically directed punch biopsy showed a squamous lesion for which invasion could not be excluded. LEEP specimen confirmed a moderately differentiated squamous cell carcinoma.

A Wertheim's operation was performed on 31/10/96 for Stage 1B cancer. The patient is presently well.

Table II summarises the treatment features and characteristics in the study. Overall, there was no significant differences in the age, operative time, the use of prophylactic antibiotics, follow up period, haemorrhage and the disease-free rate. In all the cases reviewed, the only complication encountered was that of post-operative haemorrhage. Haemorrhage was classified as mild, when the patient was only bleeding slightly and reassured and sent home, moderate, when admission for haemostasis by packing or with Monsell solution was required, or severe, when blood transfusion was necessary. Fortunately, only 10.2% (5/49) and 3.8% (3/78) of the laser and LEEP groups, respectively, suffered this complication. Amongst the 5 in the laser group, 2 had mild bleeding and 3, moderate bleeding. In the LEEP group, all 3 cases were in the moderate bleeding range. All patients with moderate bleeding were admitted for 24 hours and discharged well.

98% (48/49) and 97.4% (76/78) of the Laser and LEEP groups, respectively, remained free of disease after the procedures. The single case of persistent disease in the Laser group was a patient who had a Laser Vaporisation for CIN II. Follow up colposcopy showed persistent CIN II. Three months after the first Laser Vaporisation was done, a LEEP was performed. LEEP histology confirmed a CIN II. In the LEEP group, 1 patient with CIN II was well on follow up colposcopy and Papanicoloau smears. Eighteen months later, colposcopy revealed CIN III. Cone biopsy confirmed CIN III with clear margins. The second case was one with persistent CIN II 6 months post LEEP. Cone biopsy confirmed CIN II.

Discussion

Outpatient Laser Vaporisation and LEEP for cervical dysplasia has become an integral part of Gynaecological practice in recent years. Eilers et al[4], in their study of patients undergoing LEEP at 2 family practice clinics, reported low complication rates, minimal discomfort in the patients and a cost about half that of the hospital charges if done as inpatients. Similar results have been reported for outpatient Laser Vaporisation. The low complication rate of 10.2% and 3.8% and the relatively short operative time of 14.8 minutes and 11.8 minutes in the Laser Vaporisation and LEEP groups respectively, are consistent with most studies. The wide range of the operative times were probably due to the skills and experience of the operators ranging from Registrars to Senior Consultants. Logically, the senior doctors are more likely to be more accomplished in the performance of the procedures and may take a shorter time.

Table II
Treatment Features and Characteristics

Features and Complications	Laser Vaporisation (n = 49)	LEEP (n - 78)	p Value
Age (mean)	37.7 years (SD 8.8; range 25 years to 54 years)	40.3 years (SD 8.4; range 23 years to 67 years)	0.11 (NS)
Operative time (mean)	14.8 minutes (SD 8.5; range 5 minutes to 45 minutes)	11.8 minutes (SD4.9; range 5 minutes to 30 minutes)	0.15 (NS)
Prophylactic Antibiotics (%)	63.6 (31/49)	53.8 (42/78)	0.30 (NS)
Follow up period (mean)	15.3 months (SD 12.0)	19.1 months (SD 9.3)	0.06 (NS)
Haemorrhage (%) post procedure	10.2 (5/49)	3.8 (3/78)	0.21 (NS)
Disease Free post-procedure (%)	98.0 (48/49)	97.4 (76/78)	0.81 (NS)

Although the follow up period was relatively short, the disease free period (post procedure) of 98% and 97.4% for Laser and LEEP respectively is promising. Similar results have been obtained with success rates of between 94%[6] and 96.92%[7]. Both these procedures were found to be extremely effective for the treatment of cervical dysplasia of the cervix and permit the preservation of reproductive function and anatomic integrity.

However, the study has illustrated the limitations of depending solely on colposcopically directed biopsies for the diagnosis of cervical dysplasia. Two of the six patients in the LEEP group were diagnosed as CIN III on colposcopically directed biopsies, but the final LEEP specimen revealed microinvasive squamous cell carcinoma and a well differentiated adenocarcinoma. Massad et al[8] observed that up to 50% of women with CIN I on colposcopically directed biopsy were found to have dysplasia of a higher grade at loop excision. This discrepancy in the histopathological diagnosis between colposcopically directed biopsy and LEEP has prompted some to suggest that LEEP should be the preferred method of treatment for CIN II, since there is concern that high grade dysplasia and malignancies may be missed, with potentially catastrophic consequences. However, it has been reported that correlation between the 2 methods may be satisfactory, particularly in the low grade lesions[12]. Furthermore CO^2 laser vaporisation, when performed by an experienced, well trained operator is in itself very efficient treatment of CIN.

In conclusion, Laser Vaporisation and LEEP can be

performed safely, efficiently and with high success rates in the outpatient setting. However, there is a potential discrepancy between biopsy and LEEP specimen histologies and a fact which must be of concern to all. We await further studies on this matter.

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