

## Comparative Evaluation for Surgical and Non-Surgical Management of Radicular Cyst- An Original Research

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### Abstract:

**Background:** The most prevalent cystic conditions which damage the jaw are radicular cysts. Natural history starts with a non-vital tooth that eventually develops chronic periapical pathosis. Surgical endodontic intervention is thus suggested for chronic periradicular pathosis in a small number of cases. The preference between alternative therapies should be based on a case-by-case evaluation.

**Aim of the study:** To compare surgical and non-surgical management of radicular cyst.

**Materials and methods:** The present study was conducted in the various private and associated hospital of Atal Bihari Vajpayee Government Medical College, Vidisha. A total of 40 cases of gradually rising enormous swelling between the age of 18 to 40 years were selected for the present study. The cases were categorized into non-surgical (n=20) and surgical (n=20) intervention. The patients were recalled for follow-up by clinical and radiographic examination after 6 months.

**Results:** In the present study, we compared surgical and non-surgical management of radicular cyst. A total of 40 patients were selected for the study. We observed that satisfaction level was more seen in patients with surgical management at 1 month and 6 months. It was seen that at baseline, severe pain was most common followed by very severe pain and mild pain. Zero patients had no pain and slight pain. At one month follow-up, no patient had severe pain and very severe pain in both the groups.

**Conclusion:** Within the limitations of the present study, it can be concluded that for the treatment of radicular cyst, endodontic surgery has significantly more favorable results as compared to non-surgical management.

**Keywords:** Radicular cyst, periapical cyst, surgical management, non-surgical management

### Introduction:

The most prevalent cystic conditions which damage the jaw are radicular cyst. It is the most prevalent of all jaw cysts and form 52% to 68% of all cysts affecting the human jaw.<sup>1,2</sup> It derive from epithelial remnants which proliferate via an inflammatory reaction resulting from pulpal necrosis of a non-vital tooth. Natural history starts with a non-vital tooth, that eventually develop chronic periapical pathosis.<sup>3</sup> Most generally, it is located in the apices of the affected teeth. Even so, in contrast to lateral accessory root canals, it can also

be located on the lateral aspects of the roots.<sup>4</sup> Various studies have reported that large periapical lesions react satisfactorily to nonsurgical therapy by using calcium hydroxide paste.<sup>5,6</sup> As a reliable alternative, Cohn suggested periapical surgery when root canal treatment is either not feasible or fails.<sup>7</sup> Surgical endodontic care is thus suggested for chronic periradicular pathosis in a specific set of circumstances. The preference between alternative therapies should be based on a case-by-case evaluation. Hence, The present research was performed in order to compare surgical and non-surgical radicular cyst management approaches.

### **Materials and methods:**

The present study was conducted in the various private and associated hospital of Atal Bihari Vajpayee Government Medical College, Vidisha. A total of 40 cases of gradually rising enormous swelling between the age of 18 to 40 years were selected for the present study. For every patient, clinical evaluation and radiography were performed to confirm the existence of radicular cysts. After describing the procedure, benefits and drawbacks of the study, informed written consent was obtained from all patients. The cases were categorized into non-surgical (n=20) and surgical (n=20) intervention. After removal of dental caries for the teeth with non-surgical management the canal was cleaned by using 2.5% sodium hypochlorite. A 30 size K-file was introduced beyond the apex to drain the purulent and hemorrhagic exudate through the canal. After complete stoppage of exudates, the canal was dried by using paper points followed by intra-canal medication of calcium hydroxide paste (Metapex). On next visit, the canal was obturated by using gutta-percha cones (Dentsply India) and zinc oxide eugenol (Dentsply India) as sealer. After 1 month of observation of any signs or symptoms, the tooth was restored permanently and next follow-up visit for radiographic and clinical evaluation of periapical healing was planned after 6 months. The surgical management procedures such as access opening, removal of pulp, estimation of working length, cleaning and shaping were performed under local anesthesia followed by intra-canal medicament of calcium hydroxide paste. By using 15 No surgical blade, a vertical incision at muco-periosteum around root apex was given to remove granulation tissues by deep curettage and to drain the abscess. Also a drain was positioned by interrupted suture. The patient was recalled after 48 hrs. for observation the surgical site and patient was instructed for self-irrigation of the surgical site by normal saline. The drain was removed after 1 month and patients were directed to continue the irrigation. Periradicular healing was assessed by baseline, 1<sup>st</sup> month and 6<sup>th</sup> month radiographs. The data was analyzed by using SPSS 23.0 software.

### **Results:**

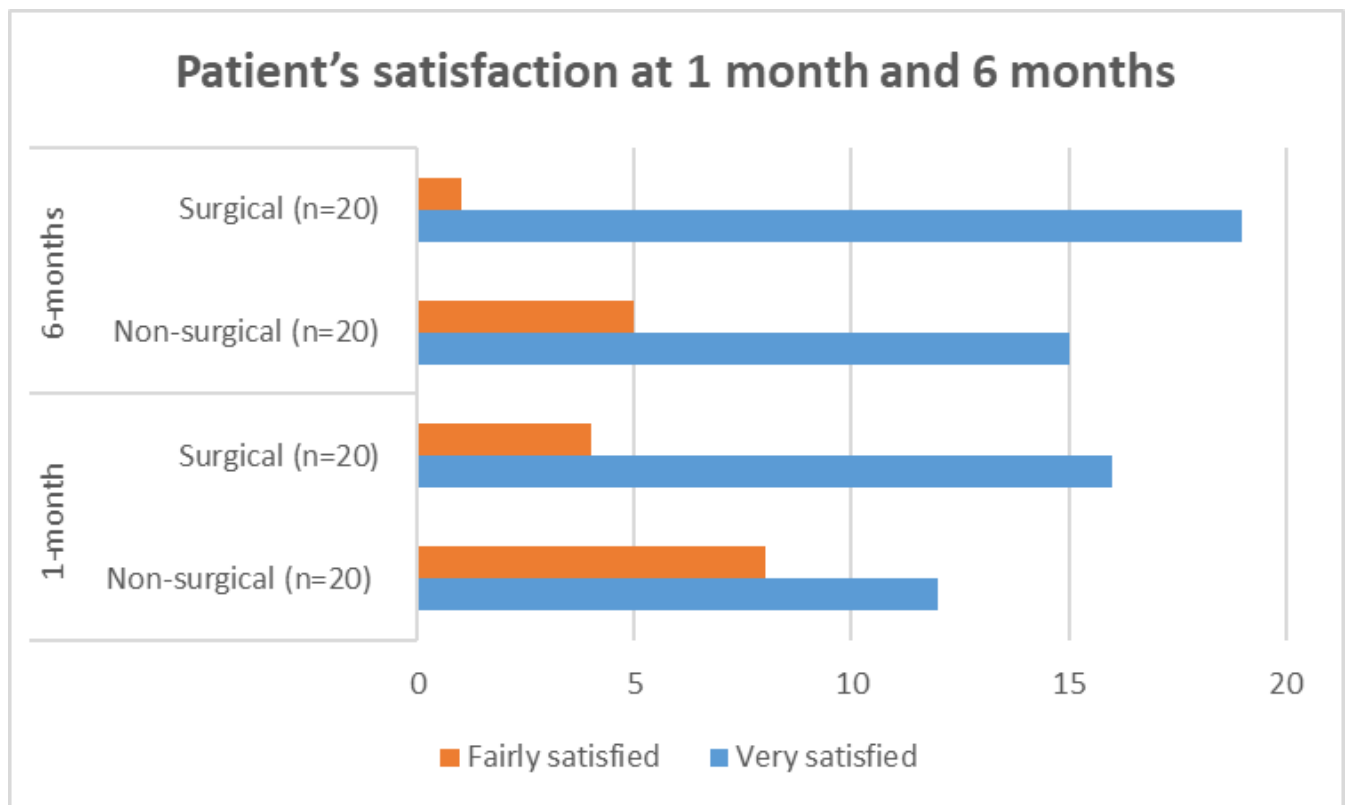
In the present study, we compared surgical and nonsurgical management of radicular cyst. For the present study, a total of 40 patients were chosen. Patients were divided into two groups surgical and non-surgical at random. Table 1 shows comparison of patient's satisfaction between the groups at 1 month and 6 months. We observed that satisfaction level was more seen in patients with surgical management at 1 month and 6 months. The results on comparison were observed to be statistically non-significant ( $p > 0.05$ ). Table 2 shows comparison of pain level between the groups at different intervals. It was seen that at baseline, severe pain was the most common followed by very severe pain and mild pain. Zero patients had no pain and slight pain. At one-month follow-up, no patient had severe pain and very severe pain in both the groups. In surgical group, 15 patients had no pain, 4 patients had slight pain and 1 patient had mild pain. In non-surgical group, 8 patients had no pain, 10 patients had slight pain and two patients had mild pain. At 6 month follow up, 18 patients in non-surgical group had no pain and 2 patients had slight pain. In surgical group, 19 patients had no pain and one patient had slight pain. The results were statistically significant at 1

month follow up.

**Table 1: Patient's satisfaction between the groups at 1 month and 6 months**

Follow up period	Satisfaction grade	Very satisfied	Fairly satisfied	p-value
1-month	Non-surgical (n=20)	12	8	0.23
	Surgical (n=20)	16	4	
6-months	Non-surgical (n=20)	15	5	0.81
	Surgical (n=20)	19	1	

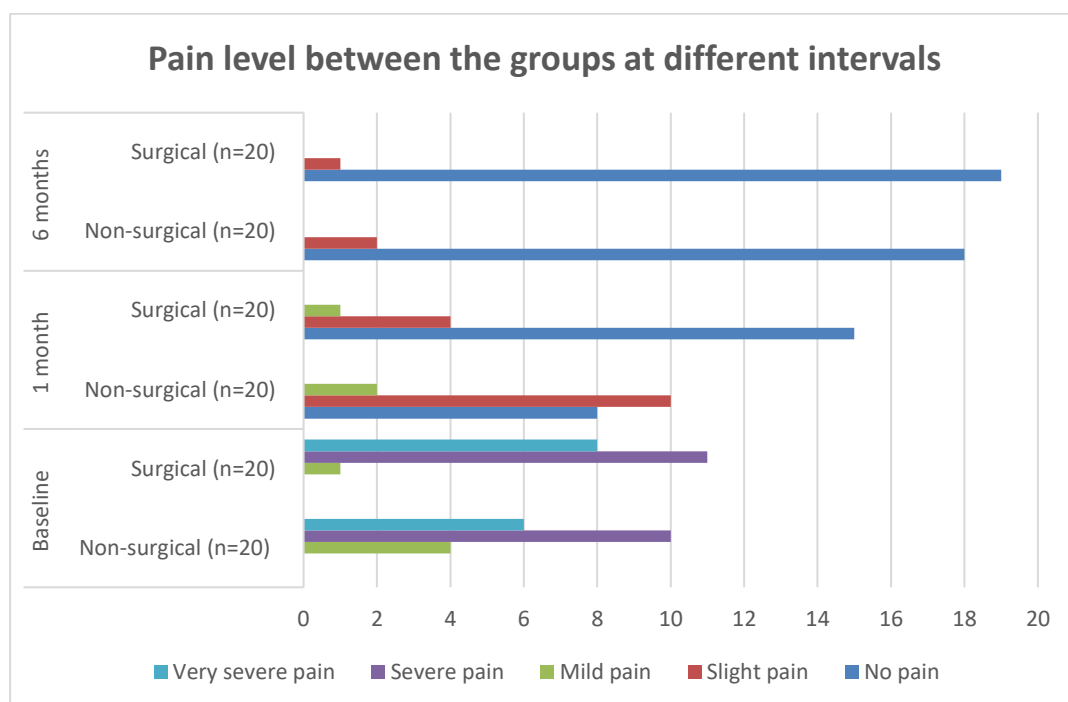
**Figure 1: Patient's satisfaction at 1 month and 6 months**



**Table 2: Pain level between the groups at different intervals**

Duration	Groups	No pain	Slight pain	Mild pain	Severe pain	Very severe pain	p-value
Baseline	Non-surgical (n=20)	0	0	4	10	6	0.26
	Surgical (n=20)	0	0	1	11	8	
1 month	Non-surgical (n=20)	8	10	2	0	0	0.002
	Surgical (n=20)	15	4	1	0	0	
6 months	Non-surgical (n=20)	18	2	0	0	0	0.28
	Surgical (n=20)	19	1	0	0	0	

**Figure 2: Pain level between the groups at different intervals**



## Discussion:

In the present study, we compared surgical and nonsurgical management for radicular cyst. We studied 40 patients. We observed that satisfaction level was more seen in patients with surgical management at 1 month and 6 months. Furthermore, it was observed that at 1 month and 6 months follow-up, the pain satisfaction was more seen in surgical group as compared nonsurgical group. The results were statistically significant at 1 month follow up. The findings were contrasted with previous research and were in line with the findings.

Shah N et al<sup>8</sup> treated 93 cases (132 teeth) either with signs and symptoms or radiographic confirmation of periapical pathosis endodontically, after follow-up for 2 years the reported success rate was 84.4%. Histopathological analysis of tissue specimens from patients in which intervention failed showed that apical cysts were involved in just 35.7% of cases, while chronic inflammatory tissue was involved in the majority (64.3%) of cases. Interestingly, 50% of the failure were reported at or 1 year after the treatment, stressing the need for long-term follow-up of endodontic cases treated. Piezosurgery and traditional surgery in radicular cyst enucleation was compared by Kocyigit et al<sup>9</sup> on 29 patients (19-Piezosurgery and 10 traditional surgery) and concluded that piezosurgery take more time than expected but on another hand in traditional surgery, with 3 cases hemorrhaging impaired the procedure, cyst epithelium perforation and enucleation difficulties occurred in 5 cases, postoperative hemorrhage occurred in 2 cases and recurrence was observed in 2 cases.

Varghese et al<sup>10</sup> radiographically observed the outcome of surgical and non-surgical treatment for radicular cyst and found significant satisfaction level in surgical group within a month, both groups were satisfied with treatment after 6 months. Similar results were found by Torabinejad et al<sup>11</sup> after 2-4 years' follow-up but success rate was higher in non-surgical group after follow-up of 4-6 years.

## Conclusion:

Within the limits of the present analysis, it can be concluded that endodontic surgery has substantially more favorable outcomes for the treatment of the radicular cyst relative to non-surgical treatment.

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