

Topical 5-Fluorouracil is an Effective Treatment in Pediatric and Young Adult Patients with Odontogenic Keratocysts

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ABSTRACT

This is a retrospective case series of patients who were treated with 5-Fluorouracil (5-FU) as an adjunct to surgical excision of odontogenic keratocyst (OKC) at Stony Brook University Hospital and the Stony Brook School of Dental Medicine, both located on Long Island in New York.

Patients were followed post-operatively for complications and signs of recurrence.

BACKGROUND

The OKC is a benign cyst with high recurrence rates.¹ Most OKCs occur in childhood or young adulthood.² OKCs are found in syndromic (Gorlin-Goltz Syndrome or GGS) and non-syndromic patients.³ Currently, there are no treatment guidelines for pediatric or young adult patients.

Chemotherapeutic agents used as an adjunct in surgery, such as Carnoy's and Modified Carnoy's solution (MCS), lower the overall recurrence rate but are linked to complications such as nerve injury. By comparison, studies have shown that 5-FU leads to decreased post-operative complications and recurrence.⁴

This study aimed to assess the safety and efficacy of incorporating 5-FU with surgical excision in treating OKCs in pediatric and young adult patients.

METHODS

An IRB-approved study of OKCs was conducted using electronic health records between the years 2019-2025 (IRB2021-00384). Patients who did not receive topical 5-FU or who were 26 years of age or older at the time of surgery were excluded.

A database was created consisting of the patient's age, biologic sex, medical history, symptoms, clinical and radiographic characteristics, treatment details, recurrences, and follow-up. The data was analyzed qualitatively and descriptively.

RESULTS

Seven patients were identified (71% male, 29% female, mean age= 16 years). One patient had a diagnosis of GGS (Fig 2a). All treatments consisted of decompression, curettage, ostectomy, and application of 5-FU in the surgical cavity. A total of 11 sites were evaluated (7 in mandible, 4 in maxilla) with the syndromic patient having multiple surgical sites. The mean follow up time was 2.3 years, with an average of 3 months between follow-up visits.

There were no immediate surgical complications. Post-operative complications were transient and included sinusitis (2/7), dysgeusia (1/7), trismus (2/7), and facial asymmetry (1/7). A possible recurrence was observed in the patient with GGS approximately 1.5 years after surgery (Fig 2b). The panoramic images of all non-syndromic cases demonstrated proper bone healing.

CASE 1



Fig 1a: Pre-operative panoramic of a non-syndromic patient demonstrating a radiolucency associated with impacted #32.



Fig 1b: 3-year post-operative panoramic demonstrating complete ossification of the right mandible.

CASE 2

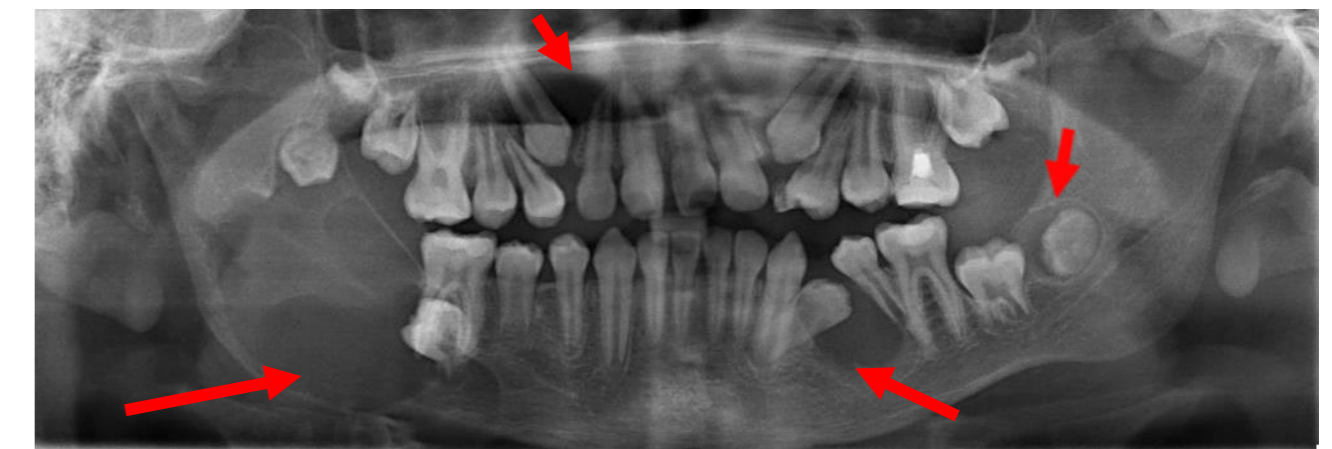


Fig 2a: Pre-operative panoramic of a syndromic patient demonstrating radiolucencies associated with #6, 17, 21, and 32.



Fig 2b: 1.5-year post-operative panoramic demonstrating a possible recurrence mesial to #5.

CONCLUSIONS

Treatment with 5-FU resulted in minimal and transient post-operative complications and no recurrences in non-syndromic patients. Further studies with a larger cohort and long-term follow-up, especially in GGS patients, should be conducted to elucidate these findings.

REFERENCES

