



## Comparison of Recurrence Rate in Excision of Conjunctival Rhinosporidiosis Mass with and without Cauterization of Base: A Randomized Clinical Trial

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### Authors' contributions

This work was carried out in collaboration among all authors. Authors SS and PS designed the study, wrote the protocol and wrote the first draft of the manuscript. Author PS managed the analyses of the study. Author MS managed the literature searches. All authors read and approved the final manuscript.

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### ABSTRACT

**Aim:** To compare the recurrence rate of conjunctival rhinosporidiosis mass excision, with and without cauterization of base.

**Study Design:** Prospective randomized clinical trial.

**Place and Duration of Study:** Department of Ophthalmology, CIMS, Bilaspur (C.G), India. (Feb 2018-Dec 2019)

**Methodology:** Twenty patients (5-25years) who presented with conjunctival mass clinically diagnosed as ocular rhinosporidiosis were included in this study. Patients were recruited from OPD ophthalmology CIMS, Bilaspur (C.G). Patients were divided on alternate basis into two groups. Each group had 10 patients. Group1 included excisions with cauterization of base with wet field cautery and group 2 included excisions without cautery. All the procedures and post-operative evaluation were done by the same surgeon. These two groups were compared for recurrence of

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mass at the same site and other sites. Post-operative evaluation was done at 1 week, 1 month, 3 months and 6 months.

**Results:** Patients' age ranged between 5-15 years were more in both groups. There were more males than females and majority of them lived in rural areas where pond water was the only accessible portable water. Lower lid palpebral conjunctiva was more involved. The mean duration of lesion was similar in both groups. All the patients were examined at 1 week, 1 month, 3 months and 6 months post-operatively, to check for recurrence at the same site by the same surgeon. The ear, nose and throat was examined by an otolaryngologist. No recurrence was found after 6 months of the procedure at ocular and extra-ocular sites.

**Conclusion:** Our study concludes that in cases of rhinosporidiosis mass of palpebral conjunctiva, total excision of mass without cauterization of base is as effective as with cauterization of base.

**Keywords:** *Conjunctival rhinosporidiosis; strawberry like lesion; surgical excision; Rhinosporidium seeberii.*

## 1. INTRODUCTION

Rhinosporidiosis is a chronic granulomatous infection of the mucous membrane characterized by friable polypoidal masses. The causative organism is *Rhinosporidium seeberii* [1], regarded as a fungus, based on morphological and histochemical characteristics. It most often involves the nose, nasopharynx and conjunctiva [2]. The majority of the cases of ocular rhinosporidiosis in India involved the palpebral conjunctiva [3,4]. Other organs often involved are the urethra and the skin. Recent evidence suggested that organism is a member of the DRIPs clade of aquatic protistan parasite [5,6]. The first description of rhinosporidiosis was by Malbran in 1892, after examination of a nasal polyp revealed a parasite. In 1990 Guillermo Seeber, for whom the organism is named, described the causative organism in nasal polyp. Recently it has been placed in a taxonomical group, mesomycetozoea, which is a heterogeneous group of microorganisms which are at the boundary between animals and fungi [7]. The disease is worldwide in distribution with its occurrence recorded in about 70 countries. It occurs in America, Europe, Africa and Asia. It is endemic in South Asian region, especially India, Sri Lanka and Bangladesh [8].

The precise mode of transmission of rhinosporidiosis is not known; trauma to the mucus membranes is probably necessary for most infection to occur [9]. In cases without apparent trauma, mechanical pressure of the spores containing secretions facilitates infection [10]. Highest incidence of cases is reported among river sand workers in India and in Sri Lanka; this is particularly relevant to such a mode of infection through abrasion caused by sand particle with the pathogen in the putative

habitat such as ground water. Another mode of infection is inhalation of field dust contaminated by the spores bearing faeces of infected animals. In dry areas, infection appears to increase after dust storms, which suggest that soil may be a source of *R.seeberii* [11].

Rhinosporidiosis most commonly affect the nose and nasopharynx. Largest reported case series in India consisting of 462 cases showed that 81.9% of the cases involved the nose and the nasopharynx, while ocular involvement was 14.2% [12]. Ocular rhinosporidiosis affecting the conjunctiva was first described in India in 1912 [13].

Rhinosporidiosis presents as a red or purple pedunculated, polypoidal masses. The lesion, initially a sessile polypoidal mass, may develop into a polypoidal vascular mass. Lesions vary in size, friable, irregular and frequently bleed on touch. White dots are found on the surface of the lesion which may give a strawberry-like appearance.

Diagnosis of ocular rhinosporidiosis is confirmed by histopathological examination of excised lesion.

Treatment of ocular rhinosporidiosis is surgical excision of the lesion. It may be a simple excision or excision with cauterization of the base to prevent re-inoculation by residual spores [14].

In this study we compared the recurrence rate of ocular rhinosporidiosis with simple excision and excision with cauterization of base with wet field cautery.

## 2. MATERIALS AND METHODS

This is a prospective randomized clinical trial carried out at the department of ophthalmology, CIMS Bilaspur, Chhattisgarh, India between February 2018 and December 2019. Twenty patients of age ranged between 5-25years were included in this study with 10 patients in each group. All patients were recruited from the Out Patient clinic of the Department of Ophthalmology.

We included patients having conjunctival mass (Red, granular, lobulated, pedunculated or sessile) arising from upper or lower palpebral conjunctiva, clinically diagnosed as palpebral conjunctival rhinosporidiosis. Rhinosporidiosis mass arising from other parts like bulbar conjunctiva and lacrimal sac was excluded from this study. Differential diagnosis includes burst chalazion and hemangioma. Complete anterior and posterior segment examination was done. Before enrolment, ear, nose and throat evaluation was done by an otolaryngologist to rule out extraocular involvement. Patients were divided on alternate basis into two groups. Group1 included excisions of mass with cauterization of base with wet field cautery and group 2 included excisions of mass without cautery of base. Each group had 10 patients. All procedures were performed by the same surgeon.

### 2.1 Procedure

All procedures were performed under aseptic condition. Lignocaine (2%) injection was

infiltrated in the involved lid for local anaesthesia. Operating eye was painted with betadine solution 5% and draped. Eye was anesthetized with topical proparacaine hydrochloride drop (0.5%). Chalazion clamp was used to expose the mass. Chalazion clamp also achieves good haemostasis. Mass was held with lim's forceps and excised from its base with no. 11 Bard-Parker blade. Meticulous excision of mass was done so that no remnant tissues were left. In group 1 base was cauterized with wet field cautery, while in group 2 no cauterization was done. Antibiotic ointment (moxifloxacin 0.5%) was applied and eye was patched and bandaged for 8 hours. Postoperatively, oral analgesic (Tab diclofenac) as per body weight was given B.I.D for 2 days. Topical moxifloxacin eye drop (0.5%) was given Q.I.D for 7 days. Excised mass was sent for histopathological examination.

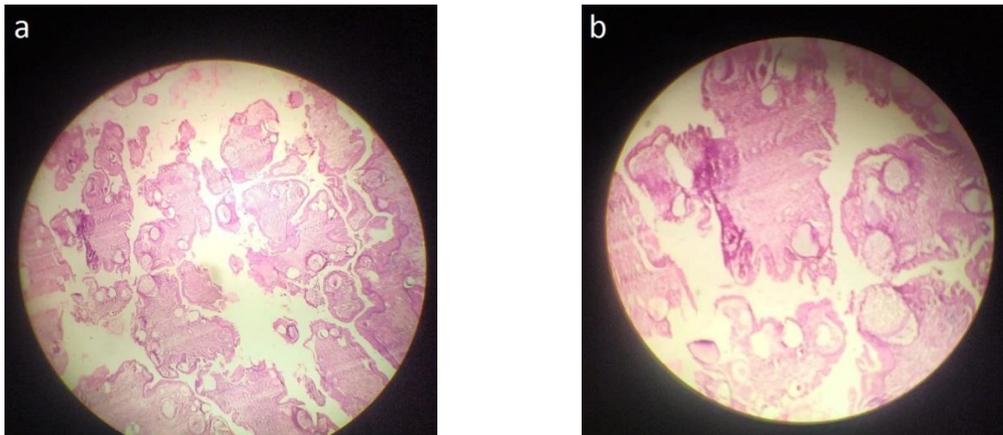
All patients were examined for active bleeding, remnant part and suppuration at wound site after 8 hours of the procedure.

Histopathological features of the excised mass shown in Fig. 2a, 2b and Fig. 3 shows large sporangia.

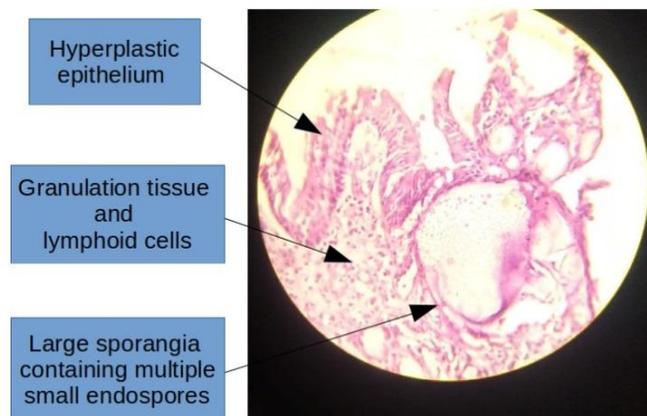
Post-operative evaluation was done at 1 week, 1 month, 3 months and 6 months after the procedure. Complete ocular, ear, nose and throat evaluation was done to check for recurrence. All patients were advised to avoid bath in stagnant water bodies.



**Fig. 1. a) Clinical photograph of right eye showing strawberry like lesion in lower palpebral conjunctiva b) Clamping of lower lid with chalazion clamp c) Resected mass on the forceps and clear base of mass over the palpebral conjunctiva**



**Fig. 2. Histopathological photographs a) Scanner View 4x b) high power view showing granulation tissue containing plasma cells, lymphocytes, focal collection of histocytes and neutrophils. The overlying epithelium is hyperplastic with focal thinning and occasional ulceration and may show papillomatosis. The subepithelial region shows sporangia containing numerous endospores**



**Fig. 3. Large sporangia showing multiple endospores, the epithelium overlying the sporangia is thinned out. Increased vascularity is seen due to angiogenesis**

### 3. RESULTS

This study included 20 patients of palpebral conjunctival rhinosporidiosis. Demographic profile of patients is shown in Table 1.

In this study, patients age ranged between 5-15years were more in both groups. Males were more in both groups (60% in group 1 and 70% in group 2). Maximum number of patients belonged to rural area in both groups (80% in group 1 and 90% in group 2). Average size of mass was 8 to 9 mm. All of the patients had history of bath in stagnant water (mainly pond water with animal interference) in past.

Involvement of lower palpebral conjunctiva was found higher than upper palpebral conjunctiva (70% in group1 and 80% in group2).The mean duration of lesion in both groups were similar (14.2 days in group 1 and 12.5 days in group 2).None of the patients had similar lesions in the past at same site or other site.

Histopathological result confirmed rhinosporidiosis mass in all 20 patients.

All patients were examined at scheduled follow-up visit. No recurrence was found in both groups at same site and extra ocular sites.

**Table 1. Demographic profile of patients in both groups**

		<b>Group 1 (excision with cautery) N=10</b>	<b>Group 2 (excision without cautery) N=10</b>
<b>Age (Years)</b>	5-10	3	4
	11-15	4	4
	16-20	2	1
	21-25	1	1
<b>Gender</b>	Male	6	7
	Female	4	3
<b>Geographical area</b>	Rural	8	9
	Urban	2	1
<b>Size of mass (Mean <math>\pm</math> SD) (in mm)</b>		8.5 (2.5)	9 (2.5)
<b>Site of mass</b>	Upper palpebral conjunctiva	3	2
	Lower palpebral conjunctiva	7	8
<b>Duration of lesion (Mean) ( in Days)</b>		14.2	12.5
<b>Previous lesion at same or other site</b>		Nil	Nil
<b>Water body exposure</b>		All	All

#### 4. DISCUSSION

Rhinosporidium seeberi incites chronic granulomatous inflammation. It presents as a polypoidal mass. Conjunctiva is the most common site involved in ocular rhinosporidiosis. Lacrimal sac, sclera and lid can also be affected. Ocular rhinosporidiosis should be differentiated with other conjunctival polypoidal mass like burst chalazion, conjunctival papilloma, haemangioma and pyogenic granuloma. Treatment of conjunctival polypoidal mass is surgical excision followed by histopathological confirmation.

Many literature and articles have been published in past mentioning different treatment approaches of ocular rhinosporidiosis. Preferred treatment of conjunctival rhinosporidiosis is surgical excision coupled with cauterization of base. Cauterization can be thermal or chemical. Cauterization prevents re-inoculation of residual spores and reduces chances of recurrence. Other mode of treatment is simple meticulous excision of lesion.

Mukopadhyay et al. (2015) reported a case of 9 year old girl who presented with a recurrent episode of marginal chalazion like mass in left eye lower lid. He had similar episode 3 months back. Incision and curettage was done. Evacuated content was examined histopathologically showing rhinosporidiosis. No cauterization was done. They did not report recurrence on follow up [15].

Mithal et al. (2012) studied demography, histopathological evaluation and treatment modalities of 50 patients with ocular and adnexal rhinosporidiosis. Complete excision of mass was done in all cases while dacryocystectomy with curettage of nasolacrimal duct was done in cases involving lacrimal sac. They did not mention cauterization of base. There was a single recurrence during the follow up involving the lacrimal sac [16].

Gichuhi et al. (2014) reported a case of 54 year old male with a mass resembling conjunctival papilloma on the medial canthus. Surgical excision was done. On histopathological examination rhinosporidiosis was confirmed. No recurrence was reported till 6 months follow-up. In this case simple excision was done without cauterization [17].

Nair et al. (2015) reported a case of an 8 year old female who presented a red vascular mass in upper tarsal conjunctiva. Mass was diagnosed as pyogenic granuloma and complete excision with cauterization of base was done. Histopathological examination was done which showed sporangia of rhinosporidium seeberi. No recurrence was found till 6 months of follow up [18].

Jain et al. (2018) reported a case of 24 year old male presented with painless vascular reddish mass in lower tarsal conjunctiva. The patient belonged to lower socioeconomic status. Mass

was diagnosed as conjunctival papilloma. Complete excision of mass with cauterization of base was done under local anaesthesia. Histopathological examination showed multiple intact and ruptured sporangia of rhinosporidium seeberi. No recurrence was seen in 3 months follow-up [19].

Thus from our study we can say that recurrence rate after excision of conjunctival rhinosporidiosis mass without cauterization of base is comparable to cauterization of base. So that simple excision of mass is also an effective procedure in conjunctival rhinosporidiosis.

## 5. CONCLUSION

The excision of conjunctival rhinosporidiosis mass without cauterization of base is as effective as cauterization of base with no risk of recurrence. More studies with large number of cases are needed for further confirmation.

## CONSENT

Written informed consent was taken from all patients before the procedure.

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

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## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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