

**ORIGINAL RESEARCH****Total conservative parotidectomy for management of benign parotid neoplasms****<sup>1</sup>Dr. Apurva Agarwal, <sup>2</sup>Dr. Manas Ranjan Deo, <sup>3</sup>Dr. Santsevi Prasad, <sup>4</sup>Dr. Sunil Kumar**<sup>1,2</sup>Senior Resident, Department of Surgery, SKMCH, Muzaffarpur, Bihar, India<sup>3</sup>Assistant professor, Department of Surgery, SKMC, Muzaffarpur, Bihar, India<sup>4</sup>Associate Professor, Department of Surgery, SKMC, Muzaffarpur, Bihar, India**Correspondence:**

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**Email:** [drmanas05@gmail.com](mailto:drmanas05@gmail.com)**ABSTRACT**

**Introduction:** Salivary gland tumours contribute for about 3 - 10% of all neoplasms of the head and neck; from this, benign tumours are commoner than their malignant counterpart. The most common benign neoplasm of salivary glands is pleomorphic adenoma which constitute about 60 – 70% incidence in the general population. The overall incidence of salivary gland tumours is roughly remains unchanged throughout the world and there is no significant predilection for either sex. In the early 1940s, intracapsular enucleation was performed as the management for pleomorphic adenoma. Leaving the tumour capsule in-situ resulted with 45% of its recurrence. Patey and Thackray explained that the capsule of the tumour is often incomplete and therefore, a lumpectomy was suggested to be replaced by other procedures available. Extra capsular dissection removes 2–3 mm border of healthy tissues without damaging the facial nerve and partial superficial parotidectomy removes 2 cm of normal parotid tissue with partial facial nerve dissection. Furthermore, SP versus TCP carries the advantages of avoiding post-operative temporary facial nerve weakness and Frey's syndrome. Hence, there is also evidence that 60% of parotid tumours lie in close contact with facial nerve and exposure of the tumour capsule remains a great concern.<sup>3</sup> this retrospective study assesses the immediate and long-term results of Total Conservative Parotidectomy in patients with benign parotid neoplasms.

**Methodology:** After obtaining clearance from the institutional ethical board and were retrospectively reviewed all parotidectomies for benign neoplasms. This study was conducted at our university hospital from the period of 2015 – 2018. All patients were screened for benign parotid neoplasms and were asked to sign the written informed consent for surgical intervention. We included all adult patients (> 18 years old) who underwent TCP for parotid neoplasms. Lesions in this study were limited to primary parotid tumours according to the 2017 World Health Organization classification.<sup>8</sup> Tumours had to be benign as shown by fine-needle aspiration cytology and including the deep lobe of the parotid gland. All surgeries were performed by the study authors and only lesions that were pathologically confirmed were included. We also excluded patients with recurrent neoplasms or history of earlier operation on the affected parotid gland. The surgical procedure started off with intubation using general anaesthesia with short acting muscle relaxant. Patients were positioned with hyperextended head and their face pointing towards the opposite side. Corners of mouth and eyes were kept exposed for observing the facial movements. Modified Blaire's incision was used to raise the skin flap superficial to parotid fascia and neck flap raised deep to platysma. All the facial nerve and its branches were identified followed, dissected and mobilised to

remove the deep parotid tissue underneath. Autologous abdominal fat was then used to reconstruct the defect and a drain was left in place for at least 48 hrs after the surgery. Immediate post-operative facial nerve dysfunction, Frey's syndrome, neuroma and keloid formation were looked as the primary outcome when total conservative parotidectomy was performed. 1-Year follow-up was needed to assess any further recurrence. All data were analysed statistically.

**Results:** A total of 30 patients who met our inclusion criterion were included in the study which was carried out in the period of 2015 – 2018. There were 20 female patients (67.2%). Most patients developed neoplasms around 40 – 49 age group (8 patient, 38%) The most common site for the lesions involving the parotid is the parotid tail (15 patients, 5.4%) followed by body (10 patients, 33.3%) and lastly body & tail (5 patients, 14.3%). All the lesion sizes were ranging between 2–6 cms. Our patients included in the study series developed mostly pleomorphic adenoma (23 patients, 76.2%), warthin tumour (6 patients, 19%) and 4.8% (1 patient) developed oncocytoma as shown in table–1.

**Conclusion:** TCP is an invaluable approach for removing parotid tumours. It usually avoids the difficult facial nerve dissection in case of recurrent tumours. Mastering this technique involves adequate training is needed with proper guidance. The rate of complications after this procedure is reported low provided that the technique was performed with meticulous care.

**Keywords:** Total parotidectomy, parotid gland, facial nerve dissection, paralysis

## INTRODUCTION

Salivary gland tumours contribute for about 3 - 10% of all neoplasms of the head and neck; from this, benign tumours are commoner than their malignant counterpart. The most common benign neoplasm of salivary glands is pleomorphic adenoma which constitute about 60 – 70% incidence in the general population. The overall incidence of salivary gland tumours is roughly remains unchanged throughout the world and there is no significant predilection for either sex.<sup>1</sup> There are some important factors in determining the prognosis of malignant salivary gland tumours which include tumour size, histopathologic type, differentiation and stage.<sup>2</sup> However, surgical resection of benign parotid lesions remains challenging because of its being double edged by recurrence and significant risk of facial nerve injury.<sup>3</sup>

In the early 1940s, intracapsular enucleation was performed as the management for pleomorphic adenoma. Leaving the tumour capsule in-situ resulted with 45% of its recurrence. Patey and Thackray<sup>4</sup> explained that the capsule of the tumour is often incomplete and therefore, a lumpectomy was suggested to be replaced by other procedures available. Extra capsular dissection removes 2–3 mm border of healthy tissues without damaging the facial nerve and partial superficial parotidectomy removes 2 cm of normal parotid tissue with partial facial nerve dissection. Still, both modalities faced the same disadvantages of lumpectomy—the risk of facial nerve trunk injury and up to 25% recurrence reported and hence these are no more recommended.<sup>5, 6</sup> Removal of superficial lobe of parotid gland (superficial parotidectomy) (SP) or total removal of the parotid gland with facial nerve sparing (total conservative parotidectomy) (TCP) provides good alternative technique for most of the benign parotid neoplasm resections with merits of facial nerve preservation, substantial decrease in recurrence rates and almost hundred percent healing.<sup>7</sup> Furthermore, SP versus TCP carries the advantages of avoiding post-operative temporary facial nerve weakness and Frey's syndrome. Hence, there is also evidence that 60% of parotid tumours lie in close contact with facial nerve and exposure of the tumour capsule remains a great concern.<sup>3</sup> this retrospective study assesses the immediate and long-term results of Total Conservative Parotidectomy in patients with benign parotid neoplasms.

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Immediate post-operative facial nerve dysfunction, Frey's syndrome, neuroma and keloid formation were looked as the primary outcome when total conservative parotidectomy was performed. 1-Year follow-up was needed to assess any further recurrence. All data were analysed statistically.

## RESULTS

A total of 30 patients who met our inclusion criterion were included in the study which was carried out in the period of 2015 – 2018. There were 20 female patients (67.2%). Most patients developed neoplasms around 40 – 49 age group (8 patient, 38%) The most common site for the lesions involving the parotid is the parotid tail (15 patients, 5.4%) followed by body (10 patients, 33.3%) and lastly body & tail (5 patients, 14.3%). All the lesion sizes were ranging between 2 – 6 cms. Our patients included in the study series developed mostly pleomorphic adenoma (23 patients, 76.2%), warthin tumour (6 patients, 19%) and 4.8% (1 patient) developed oncocytoma as shown in table-1.

The outcomes were recorded for both the short term and long-term outcomes. Short term outcomes include primary haemorrhage (1 patient, 4.8%), hematoma (3 patients, 9.5%) and partial flap necrosis (3 patients, 9.5%). When haemorrhage was encountered it is explored and bleeding vessels were cauterized. Hematoma was managed by aspiration of the accumulated fluid. Also, temporary facial nerve paresis (57%) was developed in 17 patients, temporary paralysis (14.3%) in 4 patients. All patients with temporary facial nerve paralysis regained good facial movements over 6 months of follow up time.

**Table – 1: Baseline demographics data of the included patients**

Overall	N=30	Number	(%)
Age	30-39	6	20
	40-49	11	36.6
	50-59	9	30
	60-69	3	10
	70-79	1	3.3

Sex	Male	10	34
	Female	20	66
Site	Body	15	50
	Tail	10	33
	Tail and body	5	17
Size (cms)	2-3	7	23
	3-4	12	40
	4-5	6	20
	5-6	5	17
Laterality	Right	21	70
	Left	9	30
Diagnosis	Oncocytoma	1	4.8
	Pleomorphic	23	76.2
	Warthin	6	19

## DISCUSSION

Thirty cases of TCP were identified in our study. No reported facial nerve dysfunction in the form of permanent paresis or paralysis occurred. Since these results together with the absence of other serious side effects reiterate the authors' idea of using this special technique as a primary treatment modality for parotid neoplasms. Maxillofacial surgeons have to compromise/strike a balance between recurrence and facial nerve dysfunction. Almost 20–45% of recurrence follows the enucleation of the tumour.<sup>9</sup> Some researchers advocated the use of a postoperative radiation to decrease the recurrence, especially in multinodular pleomorphic benign tumours.<sup>10</sup> However, the use of routine radiotherapy as an initial modality for benign parotid neoplasms are arguably acceptable. Hence, parotidectomy with facial nerve-sparing is preferred. Superficial parotidectomy might exhibit a good alternative for enucleation but it is still not devoid of any recurrences.<sup>11</sup>

TCP provides the least reported rates of recurrence after 15 years of follow-up without the use of postoperative radiation.<sup>12</sup> Others reported that the treatment of parotid neoplasms should be individualized according to the site of neoplasm and suggested that TCP has no more benefits versus SP. Furthermore, recurrence after parotidectomy is still a multifactorial thing linked to positive margin, tumour spillage and satellite nodules. Also, if the tumour was in direct contact with the facial nerve, both SP and TCP might leave a microscopic metastasis and sacrificing of the involved branch is mandatory to avoid any recurrence. In spite of all the previous concerns, we specifically raise our concern that TCP had least reported rates of recurrence but also scarring after previous parotid surgery results in facial nerve injury during revision surgeries are much more common. Moreover, a group of surgeons blame recurrence on the inadequate resection of the tumour so TCP would be a more appropriate and standard initial procedure. Our results, as well, showed no permanent facial nerve palsy. Although this might be less than the reported incidence reported in the literature. Which can be easily obtained through meticulous dissection and good training. Moreover, facial nerve outcomes are similar to this study were obtained in earlier reports.<sup>13</sup> Other types of complications after TCP had insignificant morbidity. Since this study might have various limitations, first being the non-comparative and secondly, the limited number of patients included. Hence, we provided a relatively longer period of follow-up with standardized management protocol and detailed report to be made observing the other side effects.

## CONCLUSION

TCP is an invaluable approach for removing parotid tumours. It usually avoids the difficult facial nerve dissection in case of recurrent tumours. Mastering this technique involves

adequate training is needed with proper guidance. The rate of complications after this procedure is reported low provided that the technique was performed with meticulous care.

## REFERENCES

1. van der Wal JE, Leverstein H, Snow GB, et al. Parotid gland tumors: Histologic reevaluation and reclassification of 478 cases. *Head Neck* 1998;20(3):204-7.
2. Mokhtar N, Gouda I, Adel I. Malignant bone tumors. In: Mokhtar N, Gouda I, Adel I, eds. *Cancer Pathology Registry 2003-2004 and Timed Trend Analysis*. Cairo: NCI, Elsheraa Press; 2007.
3. Witt RL (2002) The significance of the margin in parotid surgery for pleomorphic adenoma. *Laryngoscope* 112:2141 – 2154.
4. Patey DH, Thackray AC (1958) The treatment of parotid tumours in the light of a pathological study of parotidectomy material. *Br J Surg* 45:477–487.
5. Piekarski J, Nejc D, Szymczak W, Wronski K, Jeziorski A (2004) Results of extracapsular dissection of pleomorphic adenoma of parotid gland. *J Oral Maxillofac Surg* 62:1198–1202.
6. Emodi O, El-Naaj IA, Gordin A, Akrish S, Peled M (2010) Superficial parotidectomy versus retrograde partial superficial parotidectomy in treating benign salivary gland tumor (pleomorphic adenoma). *J Oral Maxillofac Surg* 68:2092–2098.
7. Čaušević Vučak M, Mašić T (2014) The incidence of recurrent pleomorphic adenoma of the parotid gland in relation to the choice of surgical procedure. *Med Glas (Zenica)* 11:66–71.
8. El-Naggar AK, Chan JKC, Grandis JR, Takata T, Slootweg PJ: WHO classification of head and neck tumours WHO Classification of Tumours, 4th Ed., Volume 9, 2017, IARC, Lyon.
9. Donovan DT, Conley JJ (1984) Capsular significance in parotid tumor surgery: reality and myths of lateral lobectomy. *Laryngoscope* 94:324–329.
10. Park GC, Cho K-J, Kang J et al (2012) Relationship between histopathology of pleomorphic adenoma in the parotid gland and recurrence after superficial parotidectomy. *J Surg Oncol* 106:942–946.
11. Guntinas-Lichius O, Kick C, Klussmann JP, Jungehuelsing M, Stennert E (2004) Pleomorphic adenoma of the parotid gland: a 13-year experience of consequent management by lateral or total parotidectomy. *Eur Arch OtoRhino-Laryngology* 261:143–146.
12. Wittekindt C, Streubel K, Arnold G, Stennert E, Guntinas-Lichius O (2007) Recurrent pleomorphic adenoma of the parotid gland: analysis of 108 consecutive patients. *Head Neck* 29:822–828.
13. Marchesi M, Biffoni M, Trinchi S, Turriziani V, Campana FP (2006) Facial nerve function after parotidectomy for neoplasms with deep localization. *Surg Today* 36:308–311