INTRODUCTION
Maxillectomy is the surgical resection of part or the entire maxillary bone to remove tumors. One of the major rehabilitation methods after the surgery includes prosthesis fitting to avoid complication during swallowing and speech. Present study aimed to report the effectiveness of prosthesis by comparing the characteristics of swallowing and speech in two conditions including pre and post prosthesis fitting. A 45 years old female who had undergone maxillectomy surgery was considered for the study. Client was reported with unclear speech and swallowing difficulties. She had a history of recurrent/relation of cancer on left maxilla (T2 N0 Mx) and underwent total maxillectomy. After surgical removal of cancer, the client was recommended for prosthodontic rehabilitation. Swallowing and speech were evaluated clinically both in pre and post prosthesis fitting conditions. In pre-condition, there was evident nasal regurgitation while swallowing and it was noticed for all consistency of food. Speech was unintelligible and hypernasal. However, there was a good improvement in the post prosthesis fitting condition specifically for swallowing, but speech was stayed unintelligible with moderate nasality. Hence there is a need of speech and swallowing rehabilitation after prosthesis fitting.

KEYWORDS: Maxillectomy, Swallowing, Speech rehabilitation, Palatal obturator

Case Report
A 45 years old female who had undergone maxillectomy surgery was considered for the study. Client was reported of unclear speech and swallowing difficulties. She had history of recurrent/relapse of cancer on left maxilla (T2 N0 Mx) and underwent total maxillectomy. After surgical removal of cancer, the client was recommended for prosthodontic rehabilitation. Figure 1 depicts image of patient showing oro-nasal communication and maxillary obturator prosthesis.

Speech and swallowing skills were assessed in both pre and post prosthesis fitting conditions. Perceptual and acoustic evaluation of speech was administered in both conditions individually. Perceptual evaluation included intelligibility test consisted of both open and closed set methods explain by Gordon – Brannan (1994). CVCV syllable sample was used for intelligibility analysis. Three trained speech language pathologists who have more than three years of clinical experience were participated as judges for the intelligibility test. Formant centralization ratio (FCR) was considered as intelligibility measure. It is a quantitative measure of speech intelligibility (Sapir, Ramig, Spielman & Fox, 2010). Formants of cardinal vowels were measured individually and calculated FCR based on the equation (F2u+F2a+F1i+F1u) / (F2i+F1a).

Pre-prosthesis fitting: There was consistent nasal regurgitation including solid, semi solid and liquid food. Chewing was affected from the left side of the mouth. Speech intelligibility was poor, where two among 15 words were identified as intelligible in closed set (13.3%). 35% of intelligibility noticed in open set task. FCR was calculated and it scored as 1.38.

Post-prosthesis fitting: There was a noticeable difference in the swallowing pattern after fitting with prosthesis. Participant could chew different consistency of food items. Bolus preparation was reported to be time consuming. Speech intelligibility was gradually improved. Soon after fitting of prosthesis, it was scored as 33.3% in closed set and 58% in open set of intelligibility tasks. FCR was reduced in to 1.02 soon after fitting.
Discussion
A subject who had reported of reduced speech intelligibility and swallowing difficulties was considered for the study. Speech and swallowing skills were evaluated before and after prosthesis fitting. There was a gradual improvement of speech intelligibility noticed soon after prosthesis fitting and it was noticed in both perceptual and acoustical measures. There was a reduction of FCR from 1.38 to 1.02; it indicates improved intelligibility (Sapir et al., 2010). Progress noticed in open set from 13% to 33.3% and in closed set from 35% to 58% in pre and post prosthesis fitting respectively. Though intelligibility improved soon after prosthesis fitting there was an apparent nasality in continuous speech. Swallowing difficulties were reduced after prosthesis fitting.

It is possible to get immediate effect both in terms of speech and swallowing skills after prosthesis fitting. In fact this is the reason substitute why professionals opt for the prosthesis thereupon surgery. However, client had continued with certain difficulties both in speech and swallowing skills. Mostly, patient can be considered under liquid diet through nasogastric tube once fitted with prosthesis to avoid any further complication. Majority of the time, medical professionals are not aware about the requirements of further rehabilitation including speech and swallowing rehabilitation after prosthesis fitting. As a Speech Language Pathologist, there is a need of giving proper counseling regarding the necessity of speech and swallowing rehabilitation after maxillectomy.

The study highlights the need of speech and swallowing therapy, though the prosthesis covered anatomical deficiencies; however the appreciable level of intelligibility can be acquired after speech rehabilitation. Hygiene of the prosthesis also needs to be taken care and counseled as a part of rehabilitation after prosthesis fitting. The compensatory approach is the possible treatment option for both articulatory and swallowing deficits. Efficacy of compensatory approach will vary varied based on the extent of removal of anatomical structures.

References