



Selection Criteria

Studies selected for this review examined factors contributing to successful voice and speech rehabilitation using either the BS or the PX VPs

carcinoma of the larynx and underwent TL and primary voice restoration between November 1992 and July 2000. A low pressure BS VP was inserted in the fluent (ability to sustain phonation without interruption for 10 seconds and to count from one to 15) and disfluent patients at the postoperative 12-15<sup>th</sup> day. Speech therapy was implemented for all patients. Patients were followed up in the first postoperative month, every three months for the first year, and every six months thereafter.

In the 156 patients that Abkas & Dursun (2003) studied, fluent speech was attained. Twenty-four of the patients that achieved fluent speech were unable to look after their prosthesis and preferred to use an alternate mode of alaryngeal speech (esophageal or electrolaryngeal speech). Thirty-one out of the total number of patients were disfluent or aphonic due to hypertonicity or partial spasm of the PE segment (17) and preferred esophageal speech. The other 14 patients had a complete spasm of the PE segment and preferred electrolaryngeal speech. Mean stomal pressure was higher in fluent compared to disfluent patients. The average life span of the VP was 98 days. Complications of the TEP and VP included: postoperative fistula, infection, hematoma, granulation tissue, aspiration, and swallowing of the prosthesis. Additionally, fungal colonization on the prosthesis was found to be the main reason for valve deterioration.

A non-randomized between groups clinical prospective study by Chone, Spina, Crespo, & Gripp (2005) examined 71 TL patients with neck dissection or post-operative radiotherapy following diagnosis of laryngeal squamous cell carcinoma to determine if certain variables contributed to success of speech rehabilitation. All patients were rehabilitated for voice using the indwelling BS VP between January 1995 and September 2001. The patients that had TL as of 1995 were rehabilitated with primary TEP (62 total; 32 aged less or equal to 60; 30 aged over 60) and those that had a TL before 1995 were submitted to secondary TEP (nine; two aged less or equal to 60; seven aged over 60). Successful use of the VP was defined using maximum phonation time (successful phonation was equal or greater than 8 seconds) and was assessed by an otorhinolaryngologist and speech and hearing therapist. Follow up was done at one month post-operation, every three months up to one year, and every six months after the first year. Data collected included insertion time, duration of VP use, use of radiation post-operatively, follow up and duration of each VP.

Chone, Spina, Crespo, & Gripp, 2005 found no difference in the primary TEP group regarding success rate between patients submitted to radiotherapy (38) or not (24) and those followed up for two years or more

(53) or less than two years (9). All patients in this group, regardless of age, achieved a 97% success rate. In the group with secondary TEP, there were no statistically significant differences in success rate of VP use in patients with (4) and without post-operative radiation (5) and with two years or more of follow up (8) or less (1). The overall success rate of secondary TEP was 78%; 50% of patients aged 60 or younger and 86% of patients aged greater than 60 achieved successful use of the VP. Between primary and secondary TEP groups, there was no statistically significant difference for number of patients in follow up for longer than two years and number of patients submitted to radiotherapy ( $p>0.05$ ). Greater success in voice rehabilitation was found in the group that had the

primary TEP (62 total; 32 aged less or equal to 60; 30 aged over 60) and those that had a TL before 1995 were submitted to secondary TEP (nine; two aged less or equal to 60; seven aged over 60).

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formed from interacting with patients using VPs, having knowledge about the literature and hands-on experience with VPs. The limitations of descriptions and definitions, measures and methods all contribute to a complicated comparison of results on achievement of success using a VP in terms of speech and voice quality rehabilitation.

Another limiting factor of these studies involved patient variables which included age and gender of the patients. Despite the random selection of participants across the studies, the majority of the subjects included were male (Akbas & Dursun, 2003; Chone et al., 2005; Cornu et al., 2003; Delsupehe et al., 1998; Emerick et al., 2009; Globek et al., 2004; Hotz et al., 2002; Vlantis, 2003). TEP speech has been measured as having a low fundamental frequency, relative to laryngeal speech. This low frequency voice more closely approximates the natural laryngeal fundamental frequency of males as opposed to females. Thus, the high level of voice and speech success demonstrated in the results may be biased to due to the masculine sound of TEP speech. Age was not found to be a factor in successful voice and speech rehabilitation (Chone et al., 2005).

Although patients in these studies underwent a TL, the extent of the surgery, time of TEP, pre- and post-operative treatments (e.g. chemotherapy and radiation therapy), complications due to surgery, and type of VP



and maintenance of the VP and be able to educate the patient regarding these issues. As these patients have undergone a major surgery and life change, the patient and their support network need to be counselled to promote an optimal quality of life. The SLP is an integral part of the laryngectomized patients' rehabilitation process and therefore must possess expert knowledge to enhance their communication.

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