Improving Outcomes of Cochlear Implantation – Problems & Solutions in a Developing Country

Dr. A. Senthil Vadivu and Prof. Mohan Kameswaran, Madras ENT Research Foundation, Chennai, India

The Journey of Cochlear Implantation – From the GLOOMY world of SILENCE to the VIBRANT world of SOUND

Introduction:

Overall prevalence of deafness in India - 0.2%, Deafness in Tamil Nadu – 0.6%, 2/3rd were born to consanguineous parents

Problems of CI program in INDIA

Prohibitive cost – 90% patients can't bear entire cost, Trained surgeons, Well equipped audiology unit, Trained Habilitationist, Distance, Parental motivation, Maintenance, Multi-lingual society Deep rooted cultural prejudices, Long term commitment

SOLUTIONS

Cost factor - Health Insurance Scheme

- Tamil Nadu Chief Minister's Comprehensive Health Insurance
- National funding schemes like ADIP , Funding by NGO's & trusts

Training Surgeons, Audiologist and Habilitationist

- Conducting more hands on workshops & conferences
- Offering regular Fellowship program
- Initiating mentorship
- Starting audiology and habilitation courses

Distance doesn't matter

In the Indian sub continent, patients often travel long distances for habilitation. Taking the service to their door step by opening 'Satellite centers for habilitation' across the state has greatly helped to improve the attendance and outcomes.

"Hub and Spoke model" - Main centre is in Chennai

4 satellite centres across the state

More than 83 % of the implantees have received regular habilitation for 1 year

Parental motivation

Parents motivated to have realistic expectations and to continue regular therapy by arranging gathering of implant children

Maintenance

Cost of maintenance should be attended to prevent "non-users". Help from government insurance, Initiating savings habit, Teaching to maintain the device with care, Ensuring the habit of improved personal hygiene & nutritional status to minimize infection

Multi-lingual society

Empowering parents as teachers & AV teachers as guide / friend

Deep rooted cultural prejudices

Consanguinity is one of the cause for congenital deafness in India. There is a social stigma for using device. To remove this deep rooted cultural practices adequate awareness among public is essential.

Long term commitment

The CI team along with patient and device providers has to have a long term commitment toward the goal of success

Telephonic Conversation with Cochlear Implantee

Statistics of attendance

CENTRE	PRE OP AUDIO	12 M AIDED AUDIO	BASELINE CAP	12 M CAP	BASELINE SIR	12 M SIR	% ATTENDANCE
CHENNAI	87.66	38.88	1.11	3.83	1.07	2.58	74.74
COIMBATORE	87.23	39.92	0.35	4.05	0.13	2.76	75.98
MADURAI	87.53	41.32	0.66	3.77	0.49	2.35	72.5
TRICHY	86.87	39.16	0.2	4.10	0.13	2.8	77.76
TIRUNELVELI	87.33	40.12	0.4	3.46	0.46	2.3	71.82

Our 1st Implantee Statistics of Outcomes

COMPLETED 1 YR THERAPY					
CENTRE	REGULAR (1-10 % CLASSES)	IRREGULAR (10-50 % CLASSES)	CONTINUED (>50 % CLASSES)	EXPIRED	TOTAL
CHENNAI	154 (80%)	37	10	2	243
COIMBATORE	94 (80%)	8	2	-	104
MADURAI	144 (70%)	30	4	-	178
TRICHY	120 (80%)	3	1	-	124
TIRUNELVELI	10 (80%)	2	2	-	20
TOTAL	528 (80%)	80	19	2	665

Success story in Tamil Nadu

- Initiating government programs such as TNCMCHIS
- Conducting rural camps to reach out to the needy
- Training Surgeons, Audiologist and Habilitationist
- Proper maintenance of the device
- Setting up peripheral habilitation units
- Motivating the parents about the need for habilitation

Vision 2020 – A Deafness Free Tamil Nadu - Road map ahead

- Implementation of Universal Neonatal Screening
- Creating awareness among people about consanguinity & Genetic Counselling
- Sensitizing public about need for early intervention
- Creating more implant surgeons through a process of 'mentorship'
- Creating properly mentored peripheral habilitation units across the length & breadth of the state

REFERENCES

1. Allen C, Nikolopoulos TP, Dyar D, O'Donoghue GM. Reliability of a rating scale for measuring speech intelligibility after pediatric cochlear implantation. Otol Neurotol 2001;22:631-3
2. Fang HY1, Ko HC1, Wang NM2, Fang TJ1, Chao WC1, Tsou YT1, Wu CM3. Auditory performance and speech intelligibility of Mandarin-speaking children implanted before age 5. Int J Pediatr Otorhinolaryngol. 2014 May;78(5):799-803.
3. Constantinescu G1, Waite M, Dornan D, Rushbrooke E, Brown J, McGovern J, Ryan M, Hill A. . A pilot study of telepractice delivery for teaching listening and spoken language to children with hearing loss J Telemed Telecare. 2014 Apr;20(3):135-40. doi: 10.1177/1357633X14528443. Epub 2014 Mar 18
4. Constantinescu G. Satisfaction with telemedicine for teaching listening and spoken language to children with hearing loss. J Telemed Telecare. 2012 Jul;18(5):267-72. doi: 10.1258/jtt.2012.111208. Epub 2012 Jul 23.