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Review Article

Speech Phonation Corruption After Dental Procedures

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Abstract

Provenance: Speech is constituted by voice being shaped by organs of articulation into consonants and vowels. The verbalization process is established with accommodations as the oro-dental apparatus matures through life.

Aim: This contribution reviews the organs of speech articulation making sounds, vowels and consonants affected by teeth, and focuses on speech modification after dental procedures change the dentition.

Discussion: With oro-dental repair or rehabilitation, the change-over to procure optimal mastication may be relatively quick, but disruption of speech is common, and improvement to miscegenated sounds takes longer. Patients with new teeth often experience compromised speech, and many patients have difficulty enunciating clearly.

Conclusion: This appraisal reviews the organs of articulation including teeth, and suggests some post-operative exercises to improve the situation.

Keywords: *Consonants; Organs-of-Articulation; Phonation; Speech; Vowels*

Abbreviation

DHCW: Dental Health Care Workers

Introduction

Speech is the earliest form of communication that evolved with the emergence of Mankind. From birth onwards, babies gurgle and create sounds, which subsequently provide the auditory primordia for phonation of learnt words. Associations and meanings to the spoken words are acquired with brain development and infantile learning and repetition from the child's environment. The dental profession, as oral health care workers (DHCW), evolved therapeutic skills to emulate pristine nature, by preventing, changing, or replacing oro-dental structures that, moderate or improve hard and soft morbidity and developmental abnormalities. Most speech articulation takes place in the mouth using organs of articulation, and any modification or alteration structures in the oral cavity can distort speech directly which will be influenced by the location and magnitude of alteration. The effect of natural loss of teeth, and/or exploitation of growth through orthodontics are discussed elsewhere [1]. An intact auditory system is necessary for hearing, as learning and eventual development of enunciating verbal communication is acquired. Infants learn how to form consonants, vowels, and sometimes clicks,

rolls and onomatopoeia sounds. All sounds have been allocated unique specific signs in phonetics; there are close to seventy for vowels, and twenty-seven or more for consonants. These signs are often included in better dictionaries and have been formalized [2,3], but most remain exiguous or absent in dentist's panoply of skills. Speech is built up with words which are constituted essentially by consonants and vowels [3,4]. The full development of organs of articulation is necessary to convert vibratory sounds originating in the larynx to intelligible words and speech However, organs of speech-articulation including the teeth, easily describe them [4,5]. In modern times (21st C) many dental procedures, from exodontia, to orthodontics, conservative work and prosthetic replacement, will modify the organs of articulation, especially teeth, and impact the phonations of verbal speech communication. All consonants that need teeth for formation will be affected by dentistry modification, exodontia or faulty replacement.

Aim of the Study

This appraisal focuses on changes of sounds when dentistry impacts the organs of articulation's function of sounds, mainly consonants involving teeth, namely bidental, labio-dentals, palato-dentals. Listed here are the organs of articulation, a review of the sounds involving teeth, and suggests some verbal exercises for DHCW's to ameliorate those consonant sounds affected, associated with tooth changes that are made through dentistry.

The organs of articulation are: The peri-oral muscle orbicularis-oris, the supporting upper and lower lips, the mandibular and maxillary alveolar bone, the tongue, the hard- and soft- palates, the cheeks, exhaled breath, and the teeth. The larynx has vocal cords which with exhaled air vibrate to produce voice. The larynx is considered an accessory organ of articulation, adding sound to various consonants and vowels. With masticatory compromise, as partial or total crippling of the teeth and the occlusal table, not only is chewing and swallowing changed, but also corruption of sounds arises. Speech is made up of consonants and vowels, both of which are formed by the organs of articulation. Consonants are focused on here, but vowels (monophthongs, diphthongs and triphthongs) which usually don't involve teeth are eschewed.

Types of consonants

Consonants are formed using the organs of articulation. The consonants so produced, may be with vocal sound, called voiced, or without vocal sound, called aspirate. The consonant may be explosive, sustained, or fricative. Examples of ubiquitous consonants used in many languages but especially Standard BBC spoken English, as deconstructed with descriptions, are listed and described below.

Those involving teeth are bolded.

1. "B" as in BaBe, is a bilabial voiced explosive consonant. The lips are supported by the anterior upper and lower incisors and canines.
2. "C' as in Cat. Or "K" as in Kit, are guttural explosive consonants.
3. "CH" as in LoCH. Is a guttural fricative, consonant.
4. "D' as in Dud, is a lingua-palatal, explosive, voiced consonant.
5. "F" as in IF, or Foe, is a labio-dental fricative, sustained aspirate consonant. The lower lip is placed behind the upper incisors, and a sustained flow of air without any voice input produces the sound. Absence of incisors may corrupt these sounds.
6. "V" as in Vav is a labio-dental, voiced, sustained, fricative consonant. The lower lip is placed behind the upper incisors, and a sustained flow of air with voice input produces the sound. Absence of incisors may distort this sound.
7. "G" as in GIG, is a lingual, guttural voiced consonant.
8. "H" the as in How, Hope, or Hotel, is an aspirate, open oral consonant.

9. “WH’ as in WHo, WHy, WHere is a bilabial voiced consonant followed by an aspirate H.
10. “J’ as in Joe is a bidental, lingua-palatal voiced consonant. The tongue is placed behind the upper incisors at the junction of the marginal palatal gingivae, and as the tongue is retracted, a voiced input follows immediately onto the incisors, which are opposed onto the lower incisal edges, to produce this sound. Absence of incisors may distort this sound.
11. “K” as on KiK is an aspirate, guttural explosive consonant.
12. “L’ as in Lull is a lingua-palatal, sustained, voiced consonant.
13. “M” as in MuM, is a bilabial sustained voiced consonant.
14. “N” AS in NuN is a lingua-palatal voiced sustained consonant.
15. “SH” as in ShuSH is a bidental sustained fricative consonant. The upper and lower incisors are approximated into occlusion and a sustained flow of air renders this consonant sound. Absence of incisors will distort this sound.
16. “P” as in PoP is a bilabial, explosive aspirate consonant. The upper and lower lips are closed and opened suddenly without voice. The lips are supported by the underlying incisors in the mouth: Absence of incisors or a low incisal table may distort this sound.
17. “Q” as in Que. Is the same a “K”, an aspirate, guttural explosive consonant.
18. “R” as in Ro, is, is a lingua-palatal, sustained, fricative. voiced consonant.
19. The “Hard- R” as in terrible. Is a sustained labio-palatal fricative consonant.
20. “S” as in Siss, is a lingua-palatal dental, Fricative, sustained, aspirate consonant. The upper and lower incisors are juxtaposed onto the incisal edges, and a sustained continuous flow of air produces a clear ‘S’, without any voice component. Some people manage to produce the ‘S’ as a lingua-palatal aspirate consonant, using the tongue across the front of the hard palate. Absence of incisors makes it difficult to make this sound.
21. “T” as in Tot, is a lingua-palatal, explosive, aspirate consonant.
22. “Th” as in Thin/ A labio-dental sustained consonant. The tongue is placed under the incisal edges of the upper incisors and a sustained breadth, without any voice component, makes this sound. Absence of incisors will distort this sound. “T” is often the replaced sound.
23. “Th” as in Thus. A voiced sustained labio-dental consonant. The tongue is placed under the incisal edges of the upper incisors and a sustained breadth, with a full voiced component, makes this sound. Absence of incisors will distort this sound. “D” is often the replaced sound.
24. “W” as in With, or WOW, is bilabial, voiced consonant.
25. “Y” as in Yay is a voiced, pan oral, lingual consonant.
26. “Z” as in aZure. Is a bidental, sustained, voiced consonant. The upper and lower incisors are juxtaposed onto the incisal edges, and a sustained continuous flow of air produces a buzzing ‘Z’, with a full voiced component. Absence of incisors will distort this sound.
27. “TCH” as in iTCH, is a labio-palatal, explosive consonant usually combined with an immediate voiced explosive aspirate bidental consonant. Is a double consonant combining the ‘T’ followed immediately by ‘SH’; it is a labio-dental explosive fricative unvoiced sound. Absence of incisors will distort this sound.

Discussion

Alteration in the size and shape of oral cavity produces vowel sounds whereas consonant sounds are produced by alteration in various organs of articulation linked with the speech mechanism. The ideal position of the incisal tables is to have the upper incisor edges overlapping buccally the lower incisor tips by between 0.5 mm and 1.00 mm. The sounds made that involve the teeth will be affected when the front 12 teeth (13 12, 11, 21, 22, 23 and 33, 32, 31, 41, 42, 43; IDF numeration) are changed [3,8]. This is a common natural

occurrence when children start losing their deciduous incisors after 6 years of age [5-13]. People with severe malocclusions also have challenges with pronunciation [6]. It's self-evident that exodontia of the permanent incisors will impede the formation of consonants involving teeth, like "F", "V", "S", "Z". "TH" and "SH". With total removal of teeth, after about six months post-operatively, there is also loss of supporting alveolar bone. Most people with prostheses learn how to speak clearly after the alveolar support is replaced, but will tend to miscegenate many consonants without teeth prostheses. The lingua-Palatals, "L", "D" T", "R", "S and "N" often lose their clarity and demand some coaching from informed dentists or elocution experts, to regain their pre-extraction crispness, clarity or finesse [6,7]. Some selected consonants ("B, D, K, L, M, N, and P",) are not as badly affected, as much as those involving teeth. Consonants using teeth, "F, J, V, Sh, S, TH and Z" will often be compromised and will need to be relearnt. Combinations of sounds (consonants and vowels) need to be articulated often to sound perfect. After major dental changes, like full oral rehabilitations, a special separate appointment may be scheduled and elocution coaching with educated, critical listening helps significantly with exercises [12]. A trained audiologist, elocution teacher or informed skilled Dental Health Care Worker will facilitate new learning. Providing suggested useful exercises as lyrics are in the appendix [15]. Whenever modification of the teeth is done, especially in the anterior zones, DHCW's should alert the patients to possible changes, and advise on how to compensate, learn new speech tools and maximize the benefits from the dental procedures.

Frequent repetition using verbal exercises, alone or preferably with encouraging coaching, allows the affected speech to be improved.

Modulation, (the rise and fall of flowing speech), pauses, resonance and vocabulary will determine accents or dialects of speech. Teeth are involved but are not the sole determinants. Unusual consonant sounds like sharp snappy clicks, (like in Xhosa, Nguni, or Khoi languages), thrills (like the European French "R"), the hard rolled "R" (Scots pronunciation) or onomatopoeic explosive sounds are modifications often found and add color to those languages.

Some complications

Some patients when fitted with complete replacement prosthesis tend to "make Clicking" sounds when speaking. This arises when the molars are placed too closely together on hastily constructed and processed dentures. This may also result from a too small freeway space, use of porcelain false teeth, or poorly placed teeth on 'The curves of Spee and Monson.' Using acrylic teeth, increasing the freeway space, and following natural curves should minimize or eliminate the clicking. Occasionally people develop a sibilant "S" sound which sounds like a sharp-note whistle each time they pronounce an "S" This reflex can be corrected with exercises by sustaining the "S" sound, as hissing over long periods, and adjusting the tongue against the palate and teeth, until the softer "S" sound becomes ingrained and habituated into their speech.

Concluding Remarks

Esthetic dentistry emulates ideal Nature as much as possible, whereas Cosmetic dentistry accepts compromises for various reasons [13,14]. Altered speech because of dentistry is deemed cosmetic, and can in general, be improved close to perfection. Repetition, like practice, makes perfect. New automatic ingrained reflexes producing clear sharp sounds in speech will be learned. Esthetic dentistry will optimize the sustaining of clearly pronounced speech with sound esthetic dentistry replacing teeth and support of the organs of articulation.

Conclusion: Speech modification arising from dentistry is common. DHCW's professionals can help by understanding the simple tools of articulation, the sounds involved and by providing assistance with elocution exercises.

Appendix

Below are some suggested exercises, sometimes called 'Tongue-Twisters' to improve consonants and common sounds in the English Alphabet encountered with Speech [12]. Attention to detailed correct repeated pronunciation helps moderate, then perfect wrong sounds.

Repeating often each sentence 3-5 times allows for self-listening and accepting criticism and implementing improvement. A poem of gratitude follows:

1. Around the rugged rocks the ragged rascal ran,
2. Big black bug bit a big black bear and the big black bear bled black blood.
3. Can I cook a proper cup of coffee in a copper coffee pot.?
4. Don't doubt the doorbell but differ with the doorknob.
5. Eight grey geese in a field grazing.
6. Chester Cheetah chews a chunk of Cheddar Cheese.
7. The free thugs set three thugs free.
8. Grab the groundhog from the glazed glass.
9. Grey geese in a green field grazing.
10. Two tiny tigers take two taxis to town.
11. How can a clam cram in a clean cream can?
12. Inexplicably mimicking him hiccupping.
13. I wish to wash my Irish wristwatch.
14. Jingle jungle jangle joke.
15. A slimy snake slithered down the sandy Sahara.
16. Little lucky Luke likes lakes; lucky little Luke likes licking lakes.
17. Monkeys make monotonous monopolies.
18. The next ness will not necessarily be next to nothing.
19. The rain in Spain falls mainly on the plain.
20. Wayne went to Wales to watch walruses.
21. Yoda met a Yeti on the Serengeti.
22. Zoologists illogically love to read astrology.

23. Xylophones exist or so existentialists insist.

24. Six sick hicks nick six slick bricks with picks and sticks.

25. In Hertford, Hereford and Hampshire, hurricanes hardly ever happen.

26. Ona lazy laser raiser, lies a laser ray eraser.

Reference: The Queen's English: Elocution Lessons: By MiLLi.

https://www.youtube.com/watch?v=r_Vv-KeovXE

Francis Fister, the lady of mister. By Louis Touyz

Francis Fister, the lady of mister,

I say these words without pranks.

Appreciation and salutation

For the lister of the tongue twister

And herewith register my thanks.

Twenty-six lessons for quick fix speech sessions

Of the spectacular vernacular to talk.

Most folk drop the yolk and people will poke

Fun trying to bully the words without balk.

So, this is a solution for good elocution

And say the damned doggerels we must.

Repeat ad infinitum the words and the dictum

To do justice to the spoken word we trust.

Authors Statement

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Bibliography

1. Bommangoudar JS., *et al*. "Pedodontist's role in managing speech impairments due to structural imperfections and oral habits: a literature review". *International Journal of Clinical Pediatric Dentistry* 13.1 (2020): 85-90.

2. Onions CT. "The Shorter Oxford Dictionary". Little W, Fowler HH, Coulson J. Eds. Key to the pronunciations. P XXII. Third Edition Revised Oxford at the Clarendon Place (1972).

3. Jones D. "An outline of English phonetics". 9th edition, Cambridge: Heffer (1967).

4. Cole Wilton. "Sound and Sense. A Handbook of Elocution". Passim. George Allen & Unwin. ISBN-10:0048080012: ISBN-13:978-0048080011 (1942): 81.

5. Levelt WJ. "Models of word production". *Trends in Cognitive Sciences* 3.6 (1999): 223-232.

6. Budală DG., *et al*. "A contemporary review of clinical factors involved in speech-perspectives from a prosthodontist point of view". *Medicina (Kaunas)* 59.7 (2023): 1322.

7. Holan G and Needleman HL. "Premature loss of primary anterior teeth due to trauma - potential short- and long-term sequelae". *Dental Traumatology* 30.2 (2014): 100-106.

8. Gable TO., *et al*. "Premature loss of the maxillary primary incisors: effect on speech production". *ASDC Journal of Dentistry for Children* 62.3 (1995): 173-179.

9. Kalia G., *et al*. "Speech evaluation in children with missing anterior teeth and after prosthetic rehabilitation with fixed functional space maintainer". *Journal of Indian Society of Pedodontics and Preventive Dentistry* 36.4 (2018): 391-395.

10. Aprile M., *et al*. "Malocclusion and its relationship with sound speech disorders in deciduous and mixed dentition: a scoping review". *Dentistry Journal* 13.1 (2025): 27.

11. Sterenborg BA., *et al*. "Speech changes in patients with a full rehabilitation for severe tooth wear, a first evaluation study". *Clinical Oral Investigations* 24.9 (2020): 3061-3067.

12. Bommangoudar JS., *et al*. "Pedodontist's role in managing speech impairments due to structural imperfections and oral habits: a literature review". *International Journal of Clinical Pediatric Dentistry* 13.1 (2020): 85-90.

13. Touyz LZG., *et al*. "Cosmetic and Esthetic Dentistry?" *Quintessence International* 30.4 (1999): 227-233.

14. MiLLi. "The Queen's English: Elocution Lessons" (2025).

15. Levelt W. "The neurocognition of language". Oxford Press (1999): 87-117.

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