BAHA SYSTEM AND ITS USE

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Abstract

People with impaired hearing wear hearing aids to compensate that failure. There is one category of persons with impaired hearing that are not able to use behind-the-ear hearing aids (chronical ear infections, cholesteatoma). People with that kind of damage use behind-the-ear hearing aids - prosthesis that are implanted by surgery in the mastoid bone, where the sound is transmitted to the cochlea. That is the BAHA sound processor, product of ENTIFIK Medical system.

How does BAHA System work

Prof. Bremermark during his research, found a way of using pure titanium as an anchoring unit and support for variety of prosthetic reconstructions including what was then a new type of hearing device. The fixture is incorporated within bone. This he described as direct structural and functional connection between living bone and the surface of a load carrying implant. The BAHA System is an osseointegrated implant that offers an alternative method of conducting sound via the skull bone. Its function is not to magnify or reproduce sound, but rather, to help the natural sound one hears travel efficiently to functioning cochlea.

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Toa e samo implantiran tretman {to ra-
boti ni z direktnoto koskeno povrzuva
we. Zatoa BAHA-sistemot e edinstvena
i zvonredna mo`nost za avawe na kondu-
tivnata i mezanata zaguba na slu{eto
sto tetuva
we.

**Za kog enamenet BAHA si stenot**

BAHA-stenot se upotrebava kako apa-
rat za slu{e so hroni~ni i infekcii na slu-
ite, kade (to slu{e i ot kontinuitet i oto-
ten, kako kaj otozki erozata, travmata,
hroni -ni ot otitis, hroni -ni te i inf ekci
na slu{e, kongenital nata zaguba na slu-
hot, Tre -er Kolino-sindrom, steknati
malformacii na srednoto i nad-
vore i noto uvo {to rezultiral o so nedos-
tigili so nekomplet etno (sli -en kanal -
atresija) i kaj ednostrana g uvo. BAHA-
si stenot e sostaven od slu{en procesor so
mal atitani umka i ksatura, i implantira-
a hiru{ki zad uvoto. Sistemot go pri ma
zvukot i go povrzuva, go prenesuva ni z
koskata do srednoto uvo, proces poznat
kako DBC-direktno koskeno povrzuva
we {to zna - deka vibracii te od zvu -ni ot
procesor se prenesuvaat preku koskata do
kohl eata.

It is the only implantet treatment that work
through direct bone conduction. The BAHA
System is a unique and predictable solution for
conductive and mixed loss hearing impairment.

**How can use BAHA SYSTEM**

BAHA system is usued to aid people with
chronic ear infections where hearing continued
to deteriorate, post cholesteatoma surgery,
trauma, otosclerosis, congenital hearing loss,
Treacher Collins Syndrom or other acquired
malformation of the middle or external ear re-
sulting in a missing or incomplete, complete ear
canal (atresia) and SSD - single sided deafness.
The BAHA System combines a sound processor
with a small titanium fixture implanted behind
the ear The system allows sound to be con-
ducted through the bone rather than via the
middle ear - a process known as direct bone
conduction. DBC - direct bone conduction
process means that vibrations from the sound
processor are transmitted via the bone to the
cochlea.
The sound processor is being put 10 to 12 weeks after the surgery. The BAHA System is implanted from the age of 5 and elder. BAHA@Softband is recommended for patient under the age of 5. There is a case when the BAHA System is implanted to a 5 months old baby with a bilateral canal ear atresia. The price of the BAHA System is 2,200 USA dollars that makes the system available to the people that have a need of it. Preoperative evaluation of the BAHA system candidate includes a complete medical history and a comprehensive audiometric evaluation.

In the USA since 1996 this has been accepted like a treatment for a conductive and mixed hearing loss by the FDA - Food and Drug Administration.

In 1999 BAHA System is approved by the FDA for pediatric use for children of age 5 and older.

In 2002 BAHA System is approved by the FDA for treatment of unilateral sensorineural hearing loss.

Praktički aspekti

The BAHA sound processor can be worn for all normal activities as any other hearing aid. It should be taken off when sleeping, in the shower and water sports, special protection is needed during contact sports.

BAHA system is designed to be compatible with cellular telephones.

BAHA-zvučni ot procesor može da se nosi pri svi normalni aktivnosti, kakoi drugi slučajni aparati. Toj se vadi koga se spise, pri kapeweili vodeni sportovi, deka specijal na zaštita e potrebna pri kontaktni sportovi. BAHA-sistem od - zajni ran kako kompatibilni so celularni aparati.
When telephones are used, the telephone receiver must be held close to (without touching) the BAHA sound processor. BAHA-system can be used with FM systems and infrared systems.

Types of BAHA - systems

1. BAHA - Classic 300

Adiological Indicators:
The classic 300 is suitable for patient with a pure tone average bone conduction threshold of the indicated ear better than or equal to 45 db at 0.5; 1; 2 and 4 kHz.

Battery type 675
Size 34 x 22 x 10
Weight 14 gr. including battery.
Colours: black, beige, grey, yellow and blue - sound processor, abutment cover, battery, cleaning brush.
2. BAHA - kompakt

**Audiolo{ki indikacii:**
BAHA-kompaktot e pogoden za pacienti so prag na -i st ton na koskenata sprvod-livost, za i ndi kaci i na 45 db. na izmeren sl uh na sl edhi ve f rek f renci i: 0,5; 1; 2 i 4 kHz.

BAHA-kompaktot e pomal od Kl asi k 300. Toj e di zajni ran za da napravi kompresija da go lim itira o tetuaveto i da go po-dobri kvalitetot na zvukot vo gl asna sredi na.
Moe da se nabavi vo tri boi: crna, si va i be (boja na ko`a).
Goli: 30 h 17 h 10.
Te` i na: 11 gr. vki u uvaj}i jai baterijata.

3. BAHA - kordel e2

**Audiological Indicators:**
The Compact is suitable for patients with a pure tone average bone conduction threshold of the indicated ear better than or equal to 45 dB measured at 0.5; 1; 2 and 4 kHz.

BAHA Compact is smaller then the Classic 300 and is designed with output compression to limit distortion and improve sound quality in loud environments.
It is available in the three colours: black, beige and grey.
Battery type: 13
Size: 30x17x10 mm
Weight: 11 d. including battery.

3. BAHA - Cordelle II
**Audiological Indicators:**

The Cordelle II is recommended for patients who have average bone threshold of up to approximately 70 dB, measured at 0.5; 1; 2 and 4 kHz.

The transducer is available in three colours: black, beige and gray and the body worn unit is black.

**Battery type 9V Body worn unit**

Size 90 x 34 x 26

Weight: 88 g. including battery Transducer.

Weight: 20 gr.

**Conclusion**

BAHA Systems are solution for a lot of people especially children with characteristical hearing impairment that can’t use standard hearing aids.

BAHA System has lower price then Cochlear implant. His use is significant for children from preschool and school age who can’t use standard hearing aids and have problem their voice and language.

**Literatura /References**

1. Publication Entific Medical System-Bone Anchored Applications 1; 2004.

