



BIAP recommendation n° 07/2 : Audiophonology team and child cochlear implants

The fitting of a cochlear implant necessarily comprises both audiophonological and surgical aspects.

The surgical side requires considerable otological microsurgery experience and a good knowledge of all aspects of child hearing-impairment.

The audiophonology team has an essential part to play in pre-implant assessment. (BIAP Rec. [CT 07-01](#) “Information on cochlear implants for hearing-impaired children”, BIAP Rec. [CT 25-02](#) “ Parental guidance for parents of deaf children expected to be fitted or already fitted with a cochlear implant”).

The indications for the fitting of a cochlear implant in children are in a state of flux.

They concern younger and younger children and also the possibility of bilateral implants and hybrid implants working through both electric and acoustic stimulation.

This recommendation proposes to define the role of the audiophonology team concerning the elements for prognosis, successive assessments and continuous observation of the child throughout the implantation process.

The audiophonology team, defined by BIAP [CT 14-01 bis](#) “Audiophonological structures”, is composed of

ENT doctors, phoniaticians, paediatricians, neurologists, ...

Psychologists

Speech therapists

Audiologists, hearing-aid audiologists or bio-engineers

Social workers

Specialised teachers

Any other specialist called on.

Their conclusions must be compared and confronted.

If the paediatric cochlear implantation team is distinct from that in charge of the child, it is under an obligation to collaborate with the latter (BIAP rec. [CT 25-02](#)).

MEDICAL ASSESSMENT

The commission wishes to stress certain aspects of the medical assessment:

The necessary consultation with the family and if possible with the child in order to determine:

- the expectations, motivation and level of information in the family (BIAP rec. [CT 07-01](#))
- the family history and child's case-history
- the child's behaviour
- The alarm signals that first motivated a hearing examination
- Care already in place (hearing-aid, guidance, re-education, complementary examinations).

to observe:

- o the child's behaviour
- o reactions to noise, to the voice
- o level of psycho-motor development
- o communication with family-members
- o means of communication and quality of interactions
- o voice quality.

The necessity of a complete ENT examination

- The hearing examination will be carried out through behavioural audiometry with the oto-neurological explorations judged necessary : impedancemetry, acoustic oto-emissions, auditory evoked potentials, auditory steady-state response, calorimetric vestibular examination, promontory test, electrocochleography, etc.
- The complete hearing assessment requires close collaboration with hearing-aid audiologists and speech therapists.
- Detection, through any further tests necessary, of other possible related disabilities (BIAP rec. [CT 21](#) "Multiple disabilities and hearing impairments"): visual, motor, neurological, cognitive, etc. (BIAP rec. [CT 07-01](#))

In the case of retro-cochlear impairment, also called "central deafness" or "neuropathy", the commission again draws attention to:

- o the difficulty of diagnosis in this type of lesion.
- o the problem of family expectations as to any fitting of a cochlear implant (BIAP rec. [CT 21-04](#) and [CT 25-03](#) "Parental guidance in the case of hearing-impaired children with multiple disabilities.").
- Medical imagery is essential for pre-implantation assessment. Computerised tomography and magnetic resonance imagery can show:
 - o inner ear cavity anomalies
 - o cochleo-labyrinthine ossifications (after meningitis, otospongiosis, traumatism, ...)
 - o central nervous system anomalies.

The information must be confronted with the observations made by all the members of pluri-disciplinary cochlear implant team and the team caring for the child.

HEARING-AID ASSESSMENT

It is essential to determine not only the liminary and supraliminary tonal auditory threshold but also the possible use of sufficient residual hearing dynamic.

A vocal audiometry test should be carried out if the child is old enough.

The hearing assessment should be repeated over time.

After checking that the hearing aids are working correctly and the settings have been adjusted to the child's degree of deafness, the prosthetic gain should be assessed by the usual methods, depending on the child's age.

We recommend assessing the prosthetic gain after both fitting and observation have been carried out under good conditions.

The ability to distinguish sounds and words is far more important than the tonal threshold. It is therefore always functional hearing that should be assessed: ability to distinguish sounds and/or signifying language units through hearing alone. This capacity is usually assessed by vocal audiometry testing with lists of words or phrases deprived of context (open list).

If residual hearing with prosthesis is insufficient for understanding without lip-reading, the fitting of a cochlear implant should be considered.

Detection of functional hearing is essential in borderline cases:

- certain cases of 1st degree very severe hearing loss
- certain cases of severe hearing loss
- progressive hearing loss and certain cases of mixed hearing loss

The information must be confronted with the observations made by all the members of pluri-disciplinary cochlear implant team and the team caring for the child.

SPEECH THERAPY ASSESSMENT

In the context of cochlear implant, speech therapy assessment is complex. Its aim is to serve as a basis for setting up a rehabilitation program and providing reference data for later assessments.

It is drawn up from tests and observation tables proper to each different country. These must be adapted to the child's age and stage of development as well as to the anamnesis data. (BIAP rec. [CT 24-01](#) "Language development in children aged 0 to 3 years" and [CT 24-02](#) "Early detection of language disorders in children.").

This assessment must include the following information on the child and family members:

Concerning the child

It assesses:

- functional hearing: ability to deal with auditory information (detection, distinguishing, identification, comprehension of words and phrases in different contexts)
- means of communication (BIAP rec. [CT 17-01](#) "Communication", [CT 17-03](#) "Bilingualism in the up-bringing and education of the hearing-impaired child")
- interaction quality (reciprocal attention, communication rules, imitation capacity,...)
- voice quality
- language comprehension and expression (vocabulary level, intelligibility of verbal emissions, mastery of morpho-syntactic structures, ...) (BIAP rec. [CT 20-01](#), [20-02](#), [20-03](#), [20-04](#) "Language and language assessment").

Concerning family members

It assesses:

- means of communication used by parents
- interaction quality (reciprocal attention, communication rules, imitation capacity, ...)
- time available.

The information must be confronted with the observations made by all the members of pluri-disciplinary cochlear implant team and the team caring for the child.

PSYCHOLOGICAL ASSESSMENT

This assessment constitutes a basic reference for later assessments as well as for guiding the family towards the appropriate specialists.

It requires an interview with parents and an individual meeting with the child.

The interview with the parents should determine

- the course of events leading to their contemplating a cochlear implant for the child
- how well informed they are about the implant and their motivation for such a plan of action
- the emotions aroused by the prospect of a surgical operation
- how their expectations relate to the child's needs and potentialities and to the limitations of the prosthesis
- how this plan of action fits in with the family's normal functioning
- integration of the cochlear implant into a general plan of education.

The meeting with the child

comprises:

- observation in both free conditions and assessment conditions
- conversation with the child if possible;

should determine the child's:

- relationship with others, desire to communicate, capacity for adaptation, affective and cognitive potential, motivation as to the advantage of a cochlear implant;

allows detection and assessment of any related disabilities (BIAP rec. [CT 21-01](#), [21-02](#), [21-03](#) "Multiple disabilities and hearing impairments. Deafness with related disabilities").

If the assessment reveals a risk of psychological disturbances, the implant project must be reconsidered.

The information must be confronted with the observations made by all the members of pluri-disciplinary cochlear implant team and the team caring for the child.

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