Guidelines to be followed by centres, services and units in order to be designated as Reference Centres, Services and Units of the National Health System as agreed by the Interterritorial Board.

2. EAR RECONSTRUCTION

Total or partial ear reconstruction is a complex a difficult technique since the auricula is formed by a delicate cartilage framework with natural eminences and depressions which create its particular appearance; it iscovered by a thin skin coat. The plastic surgeon does not use complex surgical equipment though must have technical abilities. . Essential knowledge of autologous tissue is required since this is used in reconstruction, emphasizing the ability to design a cartilage framework, from rib cartilage grafts. In some cases a tissue expansion is first required.

A. *Rationale for the proposal.*

► Epidemiological data (incidence and prevalence).	Ear reconstruction has two major indications: - Congenital defects, such as microtia which is a congenital malformation characterized by the total or partial absence of one or both ears at birth, which sometimes may involve a certain degree of hearing loss (due to atresia of the external auditory canal), as well as by the face size and growth. The incidence is greater in Latin-American immigrant population. Frequency varies in different parts of the world, fluctuating between *0.4 and 5.5/10,000 births*[1]. - Acquired malformations, loss of an ear due to total or partial traumatic amputations (more frequent aetiologies: traffic accidents and human violence), tumour diseases or other causes. The ear may be partially or totally destroyed by burns or infections (chondritis following burns, aesthetic causes such as "piercings" or other sources).
► Data on the use of ear reconstruction.	Total ear reconstruction is a technique rarely employed given that the incidence of microtia or total traumatic loss of the ear is rare. Hospital Valle de Hebrón (Barcelona) has received around 30 applications for partial or total ear reconstruction for the last two years.

	The technical difficulty that total ear reconstruction implies, with the result depending to a great extent in the surgeon's surgical precision, deems appropriate for the reference unit to treat a significant number of patients in order to develop enough experience to achieve satisfactory results[2].

B. ***Guidelines to be followed by centres, services and units in order to be designated as Reference Centres, Services and Units for ear reconstruction.***

► Experience of the Reference Centres, Services and Units: - Activity: • Number of ear reconstructions that should be performed in a year to ensure an adequate care. - Other data: research on the subject, postgraduate teaching, continuing training, etc.	 - Number of total ear reconstructions: a minimum of 10 every year and optimal of 20-25 per year[2]. - Number of partial ear reconstructions: 50 per year. - Accredited postgraduate teaching. - Participation in research projects and publications in the field[a]. - Continuing training programs[a]. - Programme of clinical, theoretical or bibliographic sessions on morbi-mortality.
► Specific resources of the Reference Centres, Services and Units: - Human resources required for an adequate ear reconstruction. Professional experience[b]:	 - Surgical team, formed by at least 2 surgeons specialized in Plastic, Reconstructive and Aesthetic Surgery. - Nursing staff, surgical auxiliaries and technicians. - Surgeons specialized in Plastic, Reconstructive and Aesthetic Surgery must have surgical

	experience in head and neck reconstructive surgery, especially in ear reconstruction, both in congenital malformations as well as in acquired defects (at least 10 total ear reconstructions per year in the last two years). Moreover, they must have surgical experience in the harvesting, handling and shaping of costal cartilages. - Nursing staff with experience in monitoring and care during the postoperative period of this type of pathology, through a simple and easy to learn protocol.
- Specific equipment required for adequate ear reconstruction.	- Surgical instruments for the shaping of the costal cartilage framework: perfectly sharpen rongeurs, straight and cylindrical needles, 4/0 steel monofilament, fenestrate silicon drains, gas sterilization equipment for celluloid prototypes and surgical instruments.
► Resources from other units and services besides those belonging to the Reference Centres, Services and Units required for adequate ear reconstruction.	- Thoracic Surgery Service (due to the risk of pleura injury during harvesting of the costal cartilage). - ENT Services (since microtia may be associated to malformations of the external auditory canal). - Paediatrics. - Paediatric surgery. - Maxillofacial surgery. - Intensive care unit, with experience in paediatric patients[b].
► Procedure and clinical results indicators of the Reference Centres, Services and Units [c]:	**The indicators will be agreed with the Units that will be designated.**
► Existence of an appropriate IT system: (Type of data that the IT system must include to allow identification of the activity and evaluation of the quality of the services provided)	- Filling up the complete MBDS of hospital discharge. - The unit must have a *registry of patients* who had been subject to ear reconstruction, which at least must include: - Medical record number - Date of birth. - Sex. - Admission date and discharge date.

	- Date of first visit to the patient and date when treatment began. - Main diagnosis (ICD-9-CM). • Malformation cause (congenital, trauma, septic, etc.) • Affected side. • Characteristics of the defect and degree of involvement of each ear component. - Image archive of the pre-operative condition and the results after reconstructive surgery. - Number and type of therapeutic procedures provided to the patient (ICD-9-CM): • Reconstructive surgery techniques used. • Other therapeutic procedures. - Dates of the different reconstructive surgical procedures performed. - Diagnostic procedures provided to the patient (ICD-9-CM). - Complications (ICD-9-CM): • Intraoperative: pneumothorax and breakage of cartilage parts, the helix in particular. • Postoperative: Chondritis, skin necrosis, cartilage exposure, loss of the retroauricular skin graft, steel or nylon stitch extrusion, capillary congestion, haematoma, and suture dehiscence. • Delayed: retraction of the retroauricular skin graft and collapse of the auricular sulcus, loss of prominence definition, shifting of the cartilage part, verticalization of the auricular axis and chondrodermatitis. - Objective and subjective assessment of the final outcome by the surgical team. - Patient satisfaction survey outcome. - Patient's family satisfaction survey outcome. - Advantages for the patient, in terms of social integration and relationships, that the reconstruction provided, measured through a questionnaire or an interview carried out by the reference unit, where patient and family express the pros and cons of the procedure. - Reviews. - The unit must have the required data which should be sent to the Spanish National Health Service Reference Centres, Services and Units Appointment Commission Secretariat for yearly reference unit monitoring.

[a] *Criteria to be assessed by the Appointment Commission.*
[b] *Experience will be accredited by certification from the hospital manager.*
[c] *Clinical results standards, agreed to by the experts group, will be assessed, initially by the Appointment Commission, while in the qualification process, as more information from the Reference Centres, Services and Units is being obtained. Once qualified by the Appointment Commission, the Quality Agency will authorize its compliance, as for the rest of guidelines.*

Bibliography:

[1]Sánchez O, Méndez JR, Gómez E, Guerra D. Clinic-epidemiologic study of microtia. Invest Clin 1997; 38: 203-17.
[2]Acosta A. Reconstrucción auricular con tejidos autólogos. XV Congress of the Latin American Federation of Plastic Surgery and XXXIX Congress of the Spanish Society of Plastic, Reconstructive and Aesthetic Surgery. Seville 2004.