"OVIDIUS" UNIVERSITY CONSTANTA

DOCTORAL SCHOOL OF MEDICINE

DOCTORAL FIELD MEDICINE

CLINICALLY AND THERAPEUTIC INTERFERENCE CONCERNING GENERAL ANESTHESIA IN ENT DISEASES IN CHILDREN

ABSTRACT

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INTRODUCTION

General anaesthesia requires a sum of all the qualities neccessary for an anaesthetist regarding invasing maneuvers, from simplest to the most difficult, with huge involvement in critical situations. Detecting a dangerous situation before the onset. making right decision is a matter of seconds.

On top of these, if under surgery is a child, there is a lot of medical, social, emotional, legal involvement overwhelming any kind of similar medical situation.

ENT pediatric surgery is under a paradox. On one side the general perception that majority of ENT surgical procedures are minor, and on the other side there is parents concern that their own child should not undergo in similar nightmare they experienced under local anaesthesia in childhood. Anesthetists which are not involved daily in pediatric ENT have the fear of the "death-game". This is particularly justified by extremely critical situations of respiratory failure due to endotracheal foreign bodies.

Another particularity of ENT surgery is that the anaesthetist and surgeon share the same "playground", which is very reactive site, extremely vascularised and involves so frail pathology, which requires a perfect match of "playmates" for best results.

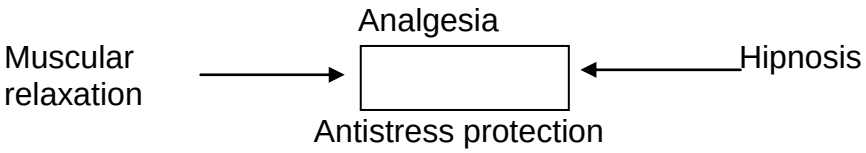
Child's pain and sore longtime were ignored. Today's age related pain scales allow better evaluation of pain management, studies based on satisfaction index, forms filled by patient after the surgery show that the postoperative nursing is mainly concentrated on pain management.

The subject of this thesis was mainly picked after I spent several years in ENT department. Due to increasing number of pediatric surgical cases I looked forward for techniques to improve the preoperative, intraoperative and postoperative management of these patients, to combine the quickest, the most efficient and cheapest ways to provide a general anaesthesia adapted to requirements and to particularities of child's anatomy, physiology and psychology.

4. GENERAL ANAESTHESIA TECHNIQUES USED IN ENT PEDIATRIC SURGERY

Anesthetizing child requires good analgesia, good homeostasis, intensive care for patient and optimal operating conditions for surgeon. All this need to cover 3 facts.

1. Anesthesia required for surgery. First of all it has to provide analgesia - lack of pain for the entire surgery. Modern general anesthesia has to accomplish the "anesthetic quadrant": analgesia, hypnosis, muscular relaxation, anti-stress protection.



This quadrant's components will vary as importance from case to case, so there will be three types of anesthesia techniques:
A. Local anesthesia
B. Regional anesthesia
C. General anesthesia

These components vary depending of surgery type, associated pathology, theatre technical possibilities, preference of the surgeon and anaesthetist, and so there will be different types of general anaesthesia:

i. One drug GA uses only one drug to achieve the four components. Presently is not used anymore because of the side eeffects. Examples: ether anaesthesia, halothane, keramine, penthotal, etc
ii. Pivot GA is a multidrug anaesthesia which uses a main drug called pivot plus others. Examples: halothane pivot GA, sevorane pivot GA, neuroleptanaesthesia, etc
iii. Inhalational GA uses volatile agents like halothane, isoflurane, sevoflurane, desflirane, N2O, etc, administered inhalational.
iv. Intravenous GA uses drugs given intravenously: barbiturates, short acting drugs like penthotal, benzodiazepines: diazepam, midazolam, neuroleptics: plegomazine, droperidole, neuromuscular blockers: succinilcholine, rocuronium, atracurium, pancuronium, central analgesics: meperidine, morphine, fentanyl, pentazocine.

2. Protect organs functions during surgery and anaesthetic stress. Uses mechanical ventilation, prevent and treat low blood pressure, prevent cardiac failure and cardiac arrest. All these requires a continous skilled clinical monitor of patient. The fact is that the anaesthetist is the intensivist of the patient under anaesthesia. He organises mechanical ventilation, haemodinamic and hidroelectrolitic equilibrium, prevention of renal failure in post-op, etc.

3. Surgical comfort is needed for ENT surgeon - a good environment to operate. This comfort prioritise safety of patient. For example, an ENT surgery needs a good analgesia and hypnosis which give a very good surgical comfort by injecting drugs which side effects are respiratory failure or cardiac failure. To prevent these, the anaesthetist has to use specific techniques to follow-up the patient and intensive care: protect the airway by oro-

tracheal intubation, mechanical ventilation, intravenous therapy, ECG monitor, CVP (central venous pressure), pulsoximetry, blood pressure monitor, temperature monitor.
Any type of pediatric anaesthesia, escpecially general anaesthesia, requires to follow some specific principles.Newborn and small child (under age of 8) anaesthesia particularities are consequences of anatomy and functionality differences.

Datas from studies of anaesthetic drugs for adults were applied to newborn, small children as well. Latest studies improved the safety and efficiency of these substances.

4.4 Particularities of faringo-larinx involved in anaesthesia in child

There are some particularities of the farynx and larynx in child that the anaesthetist must consider. Surgeons activity area is very small and there is the intersection of two functions: respiratory function and digestive function. At any time, by the surgeons maneuvers or by pathology the airway is easily compromised. Consecutive to this an acute respiratory failure follows, and to this may undergo to cardiac failure or even cardiac arrest.

In such undesirable situation, the anaesthetist and the surgeon must work as a team, prioritise each ones activity for patients safety. A typical example is endoscopy, or suspended microsurgery of larynx, when the surgeon needs assistance to perform in good visual condition, and the anaesthetist has to protect the airway. In such case there is a compromise. Endotracheal tube will be chosen smaller and the surgeon will accept it and protect the tube, informing the anaesthetist continously about it.

Mandatory airway protection, even in short cases is a consequence of the small area, will protect the airway for secretions and blood aspiration. Endotracheal tube has to be well fixed.

There is an option to provide more space to surgeon and this is nasal intubation.

Extubating time is extremely critical, and has to be done when pharynx and larynx protecting reflexes are functional and when the surgery site bleeding stopped.

Surgery in pharynx and larynx area does not specifically requires blocking neuro-muscular joint, and so patient may have trigger for a spontaneous ventilation.

General anaesthesia has advantages in child ENT surgery:
- maximum safety of the child during the surgery, by protecting the airway
- high intensive care under the general anaesthesia, by hidro-electrolitic therapy, intravenous haemostasis if required, etc.
- hypnosis is provided only under general anaesthesia
- surgical comfort is maximum, providing time and space for surgeon.

5. MATERIALS AND METHOD

5.1 OBJECTIVE.DATA COLLECTION.STUDY METHOD.

5.1.1 OBJECTIVE

Evaluation of anesthetic management in ENT pediatric surgery to identify specific objectives in order to improve anesthetic practice, patient, parents and surgeon satisfaction, timing and cost of hospitalization.

5.1.2 TYPE OF STUDY

This is a prospective, observational and mono-center study, for a 5 year period.

5.1.3 PLACE OF STUDY

This study covered pathology in ENT clinic in Emergency County Hospital of Constanta

5.1.4 EVALUATED PATIENTS

This study included 1524 pediatric patients aged from 0 to 16 years, according to criteria:

Including criterias

- surgical procedure under general anesthesia - excluded procedures under local anesthesia.
- patients postop monitor has to be followed in postoperatory unit or in intensive care unit.

Exclusion criteria: Surgeries under local anesthesia were excluded.

5.1.5 METHOD

Collecting datas

Data were collected by a questionnaire specifically elaborated which included three parts:

- preoperatory data – general observation sheet
- intraoperatory data – anaesthesia sheet
- postoperative data – postoperative complications

Data were collected in the first 24 hours postoperative, and two anaesthetist were involved, plus nursing staff.

6.RESULTS AND DISCUSSIONS

6.1 DISTRIBUTION BY YEARS AND AGE

The retrospective study analyzed 1524 pediatric cases which required surgery under general anaesthesia, between 2007-2011.

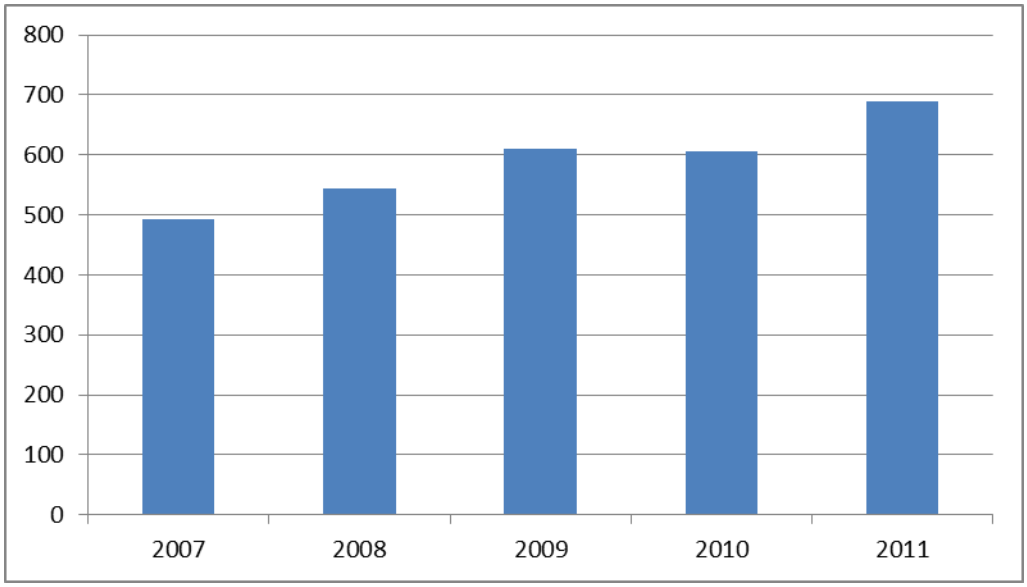


Fig. no. 6. Distribution by years

Table no. XVII: Repartition of the paediatric cases, by ages groups, by type of pathology :

Tipul afecţiunii	0-1	1-3	4-7	7-14	14-18	Total	%
Adenoids	5	124	423	324	5	**881**	57.81
Adenotonsils		8	88	96	3	**195**	12.80
Tonsils			36	39	5	**80**	5.25
Malformations			8	9	7	**24**	1.57
Medico-surgical emergencies	9	47	25	63	65	**209**	13.71
Posttraumatic afections			4	3	3	**10**	0.66
Tumoral afections		2	4	1	2	**9**	0.59
Septic complications	5	5	27	41	38	**116**	7.61
Total	**19**	**186**	**615**	**576**	**128**	**1524**	

From the table XVII can be deducted that the main age group in 4-7 years old, with a number of 615 cases, and 7-14 years old, with 576 cases. Main pathology resumed to adenoids and tonsils. Also there were an important number of emergencies, and septic complications.

6.2. DISTRIBUTION BY PATHOLOGY

From 881 cases of adenoids, predominant group of age was 4-14, with 747 cases. This can be explained that in general, this type of surgery is postpone usually after age of 3.

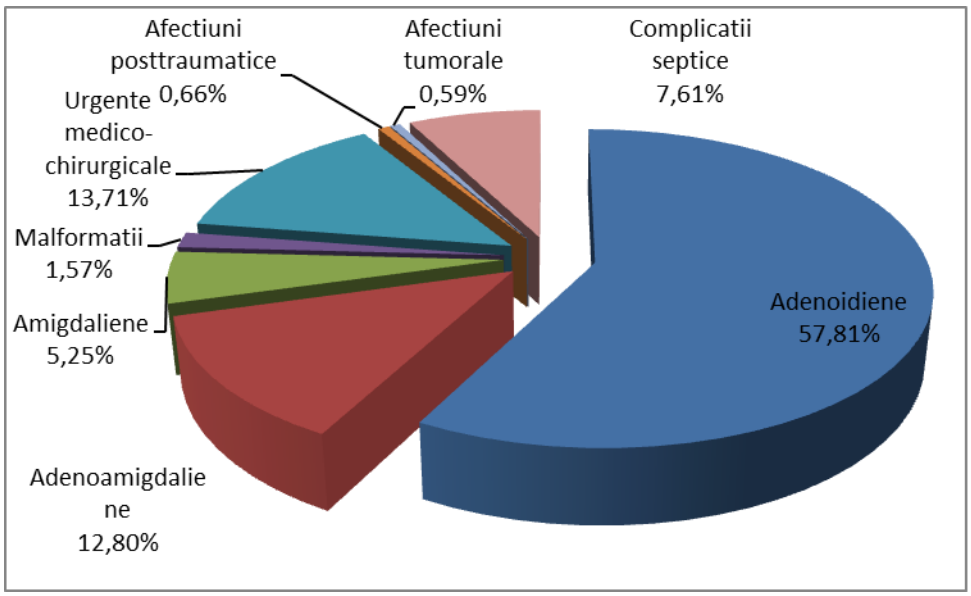


Fig. no. 11: Distribution by pathology

In sample included, the most incidental pathology was adenoid with an incidence of 57.81%, followed by medical or surgical emergencies 13.71%. Less incidental were tumoral cases 0.59%.

6.5. ADMISSION TYPE

Repartition of the studied cases by the type of admission is presented in the table no.XXV.

Table no. XXV: Admission type

Type of admission	No of pacients	Percent
Emergencies	209	13.71
Scheduled	1315	86.29
Total	1524	100

Can be observed a predominancy of scheduled cases, 1315 cases from total of 1524, representing a 86.29% of cases. These results from principle that in pediatric ENT pathology, there is needed a convalescence period of minimal 3 weeks after an acute inflammatory process at the airway, to minimize surgical risks.

6.6. ASSOCIATED PATHOLOGY

Browsing throughout patients files revealed a high incidence of asthma combined with adenoid and tonsils pathology, 6.43% of total cases have asthma. Allergy reaction might be an explanation to this.

Table no. XXVI:Main associated pathology

Boli asociate	nr pacienti	%
Asthma	98	6.43
Psihomotory retard	25	1.64
Epilepsy	24	1.57
Minor talasemia	12	0.79
Genetic pathology	5	0.33
Congenital cardiac pathology	3	0.20

6.7. PREMEDICATION TYPES

The importance of premedication is revealed by recent studies, which show that preoperatory or postoperatory agitation may have negative effects on patients evolution, e.g: respiratory failure, high oxygen demand, accidentally disconnection of catheters and lines, and, specially in ENT surgery, high bleeding risk from surgical site.(79)

Table no. XXVII: Types of premedication

Tipurile de premedicatie	Număr pacienti	Procent
Orally	1041	68.31
Intranasally	59	3.87
Intrarectally	85	5.58
Intravenous	215	14.11
No premedication	124	8.14
Total	1524	100

6.10 ANESTHESIA LENGTH

Table no. XLIV. Anesthesia length

Durata anesteziei	Nr cazuri	Procent (%)
Less 30 minutes	741	48.62
Between 30 and 60 minutes	446	29.27
Between 60 and 120 minutes	254	16.67
Over 120 minutes	83	5.45
TOTAL	1524	100

6.12 INCIDENTS AND ACCIDENTS

General anesthesia includes risks of problems from anesthesia machine, anesthetic circuit, laryngoscopy, intubation, mechanical ventilation, surgery length, lines, administered drugs.

Regarding intravenous therapy, there might be incidents considering allergy to medication, not working lines, setting a new cannula.

Other incidents might be:

- patient positioning – pressure point protection – peripheral nerves damage
- cornea lesions due to lack of protection of cornea or improper use of facial mask

- mandibular pain due to difficult intubation
- tooth or lips lesions during laryngoscopy
- nasal bleed after nasal intubation.

6.13 POSTOPERATIVE COMPLICATIONS

6.13.1 Postoperative agitation

Pain, blood loss, hypoxia may determine agitaion. Theory describes agitation after inhalational general anesthesia well treated with small doses of propofol.
There are scales to evaluate sedation and agitation: Ryker scale, motor response scale, Ramsay scale, Richmond scale. In this study we used Richmond scale.(95)

Table no. XLIX. General distribution by grades of agitation

Richmond scale	Total pacients	Percent
4	**25**	**1.64**
3	**117**	**7.68**
2	**227**	**14.90**
1	**376**	**24.67**
0	**112**	**7.35**
-1	**182**	**11.94**
-2	**276**	**18.11**
-3	**178**	**11.68**
-4	**31**	**2.03**
-5	**0**	**0.00**
Total	1524	**100**

6.13.2 Muscular pain

Muscular pain was avoided using modern nondepolarising curare, such atracurium or rocurionium.

6.13.3 Throat pain

Post intubation throat pain was present at 223 of cases, with no great difference between tracheal tubes used: 16.55% no cuff ET tubes and 19.26% cuffed ET tubes.

Table no. LIX. Incidence of pain by the type of the tube used

Tube type	Pain	Percent (%)	No pain	Percent (%)	No. of pacients
Cuffed ET tubes	197	16.55	993	83.45	1190
No cuff ET tubes	26	19.26	109	80.74	135

6.13.4 Postoperative pain.

According with speciality literature(97), postoperative pain is minimally after adenoidectomy but can be severe after amigdalectomy and can be included in intense pain in the case of amigdalectomy and in low to medium in the case of adenoidectomy.

Complete reduction of the postoperative pain is very hard to do with a single medicine or a single analgetic technique. Nowadays, it is used a multimodal approach for the treatment of the pain, which have some principles(98):

- efficiency amelioration of the pain can be done by utilization of two or more drugs;

- by reduction of the amount administrated for each of the drug, is reducing the incidence and severity of the potentially adverse reactions.

For the evaluation of the pain I used three scales :

- DAN scale
- CHEOPS scale
- Visual analogue scale(VAS)

DAN scale was used to evaluate pain. Two lots were used of 21 patient each. In first lot it was given only Paracetamol, and the second lot received supplemental opioid (meperidine). These were the results:

Table no. LXI: DAN score at group 1-paracetamol

	1h	***2h***	***4h***	***6h***	***12h***	***24h***
Media	3.57	2.86	2.43	1.86	1.48	1.10
Standard error	0.23	0.19	0.15	0.14	0.11	0.07
Median	3	3	2	2	1	1
Module	3	3	2	2	1	1
Standard deviation	1.08	0.85	0.68	0.65	0.51	0.30
Variant	1.16	0.73	0.46	0.43	0.26	0.09
Arching	-0.15	0.38	0.20	-0.43	-2.21	7.56
Asimetry	0.46	0.83	0.28	0.14	0.10	2.97
Variation amplitude	4	3	3	2	1	1
Minimum value	2	2	1	1	1	1
Maximum value	6	5	4	3	2	2
Dimension of the lot	21	21	21	21	21	21
Trusting interval	0.49	0.39	0.31	0.30	0.23	0.14

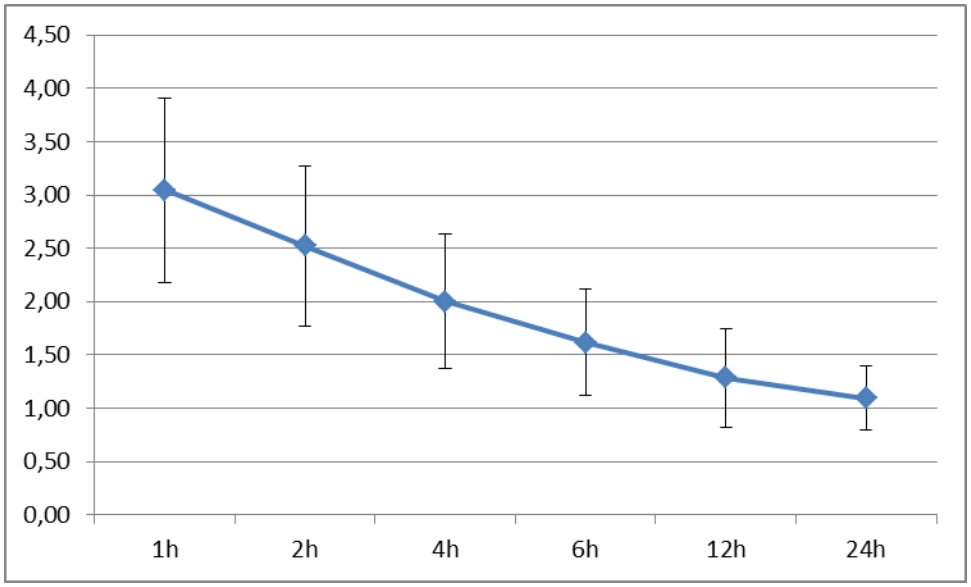


Fig. no. 51: Evolution of DAN score at group of patiens who rececеived Paracetamol and Meperidine

In opoid-added lot there was a relevant difference of score in the first hour, but after 24 hours the score was equal. In the table no.LXIII and figure nr.52 it can be observed comparative evolution of the medium values.

Table no. LXIII. Medium values of DAN scores for the groups of patients

Scor DAN - Media	*1h*	*2h*	*4h*	*6h*	*12h*	*24h*
Group1	3.57	2.86	2.43	1.86	1.48	1.10
Group2	3.05	2.52	2.00	1.62	1.29	1.10
p	0.0448	0.0931	0.0200	0.0960	0.1066	0.5

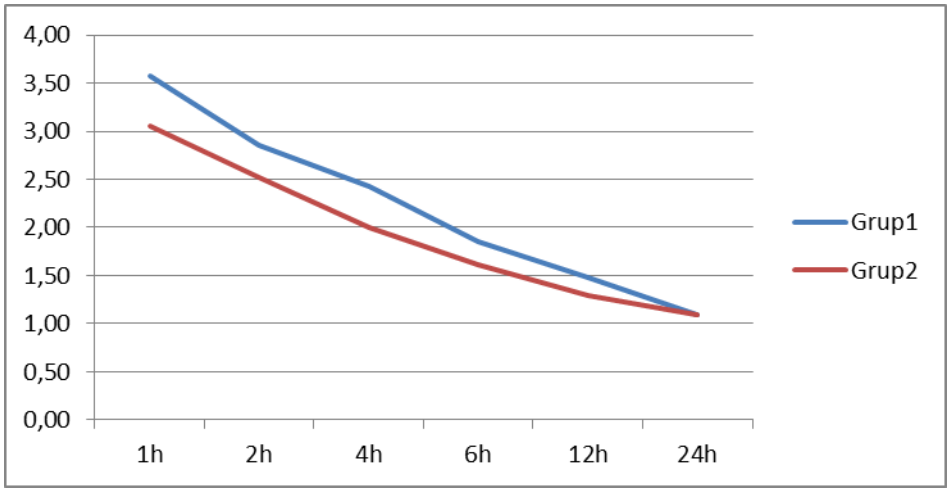


Fig. nr. 52: Graphic representation of medium values variation for DAN score for two groups of patients

CHEOPS scale is used for ages from 18 months to age of 6. In my study I used a lot of 641 patients divided in three. First group of 68 cases received only paracetamol for pain, second group of 351 received paracetamol and NSAID, and the 3rd group of 222 cases received supplementary meperidine.

Table no.LXIV. CHEOPS scale (99)

Facial expression **0 - smile,positive facies** **1 – neutral facies,null expresivity** **2 – grimaces,negative facies**
Speaking **0 – the child is speaking and don't complain** **1 – the child do not speak** **2 – the child is cries but do not suffer** **3 – child complains of pain**
Cry crying **1 – absent** **2 – moaning,crying** **3 – shouting, moaning cry**
Treatment if the score is ≥ 3/9

Table no. LXV:Statistic analyses for the values of the CHOPS score in the group Paracetamol

	1h	2h	4h	6h	12h	24h
Media	4.44	3.74	3.11	2.63	1.93	1.59
Standard error	0.18	0.17	0.14	0.12	0.13	0.12
Median	4	4	3	3	2	2
Module	4	4	3	3	2	1
Standard deviation	0.93	0.86	0.75	0.63	0.68	0.64
Variant	0.87	0.74	0.56	0.40	0.46	0.40
Arching	1.00	0.70	0.29	-0.54	-0.63	-0.48
Asimetry	0.79	0.55	0.40	0.47	0.09	0.59
Variation amplitude	4	4	3	2	2	2
Minimum value	3	2	2	2	1	1
Maximum value	7	6	5	4	3	3
Dimension of the lot	68	68	68	68	68	68
Trusting interval	0.37	0.34	0.30	0.25	0.27	0.25

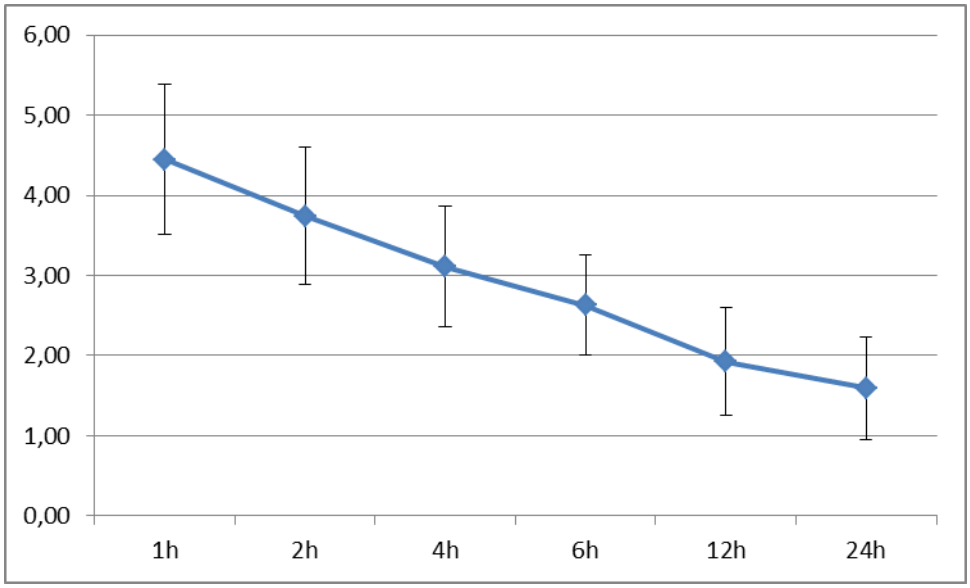


Fig. no.53. The evolution of the pain in the group with Paracetamol

Group of 68 patients which received paracetamol had a pain score of 4.4 at first hour, and a score of 1.59 at 24 hours. These values requires supplemental analgesia.

Table no. LXVI:Statistic analyses for the values of the CHOPS score in the group Paracetamol and NSAID

	1h	2h	4h	6h	12h	24h
Media	3.79	3.09	2.63	2.19	1.66	1.25
Standard error	0.07	0.06	0.06	0.05	0.05	0.04
Median	4	3	3	2	2	1
Module	4	3	3	2	2	1
Standard deviation	0.80	0.73	0.65	0.57	0.57	0.47
Variant	0.64	0.53	0.42	0.33	0.33	0.22
Arching	1.34	-0.28	-0.52	-0.20	-0.67	1.49

Asimetry	0.65	0.21	0.38	-0.01	0.16	1.58
Variation amplitude	5	3	3	2	2	2
Minimum value	2	2	1	1	1	1
Maximum value	7	5	4	3	3	3
Dimension of the lot	351	351	351	351	351	351
Trusting interval	0.13	0.12	0.11	0.10	0.10	0.08

Table no. LXVI shows the median of pain scores is 3.79 at first hour, smaller than precedent group, but this required supplemental of analgesia as well. The evolution of the Cheops score is illustrated in the figure no.54.

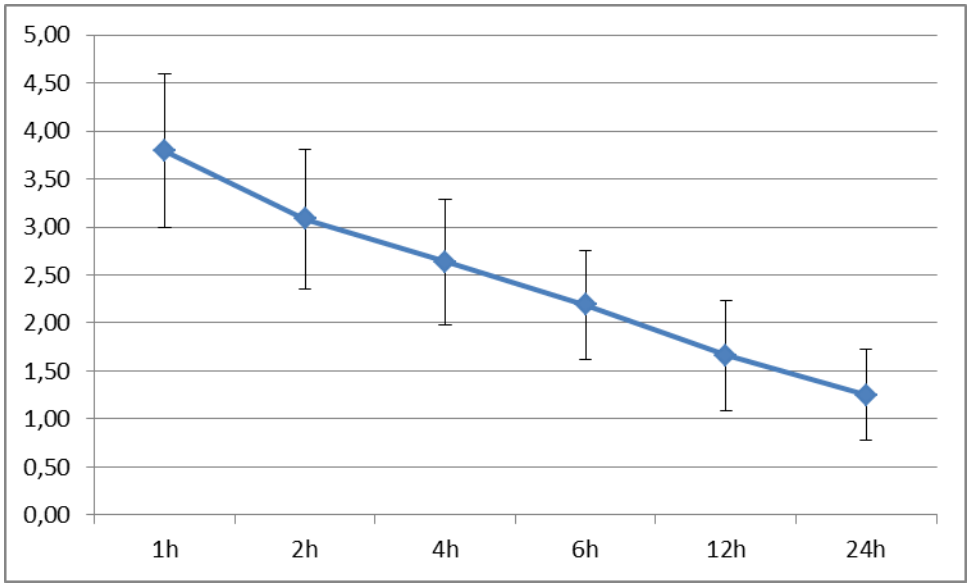


Fig.no. 54: The evolution of the Cheops score in the group Paracetamol and NSAID

For the last group of 222 cases which received triple-pain killers the median of pain score is 2.97 at first hour and 1.08 at 24 hours.Dates are presented in the table no. LXVII.

Table no. LXVII: Statistic analyses for the values of the CHEOPS score in the group Paracetamol, NSAID and opiods

	1h	***2h***	***4h***	***6h***	***12h***	***24h***
Media	2.97	2.57	2.13	1.69	1.36	1.08
Standard error	0.09	0.07	0.06	0.06	0.05	0.03
Median	3	3	2	2	1	1
Module	3	3	2	2	1	1
Standard deviation	0.85	0.69	0.58	0.55	0.48	0.27
Variant	0.72	0.48	0.34	0.31	0.23	0.07
Arching	1.28	0.95	0.86	-0.59	-1.71	8.18
Asimetry	0.52	0.39	0.34	0.01	0.58	3.16
Variation amplitude	5	4	3	2	1	1
Minimum value	1	1	1	1	1	1
Maximum value	6	5	4	3	2	2
Dimension of the lot	222	222	222	222	222	222
Trusting interval	0.18	0.15	0.12	0.12	0.10	0.06

Comparing medians of pain score at first hour in the 3 groups, there is a significant difference in the group with paracetamol (4.44) compared with NSAID added group (3.79) ant opioid added group (2.97). This difference is constant to 24 hours as well, and shows a superiority of multimodal analgesia. Comparative values are presented in the table no.LXVIII.

Table no. LXVIII: Comparative values of the media of CHEOPS score for the three groups of patients.

	1h	***2h***	***4h***	***6h***	***12h***	***24h***
Paracetamol	4.44	3.74	3.11	2.63	1.93	1.59
Paracetamol + NSAID	3.79	3.09	2.63	2.19	1.66	1.25
p	0.000116	0.000026	0.000412	0.000196	0.017313	0.000694
Paracetamol	4.44	3.74	3.11	2.63	1.93	1.59
Paracetamol + NSAID + Opioids	2.97	2.57	2.13	1.69	1.36	1.08
p	0.000000	0.000000	0.000000	0.000000	0.000002	0.000000
Paracetamol + NSAID	3.79	3.09	2.63	2.19	1.66	1.25
Paracetamol + NSAID + Opioids	2.97	2.57	2.13	1.69	1.36	1.08
p	0.000000	0.000000	0.000000	0.000000	0.000034	0.000977

Visual Analog Scale is one of the commonest used pain scale for the bigger child and adults.(100,101,102)

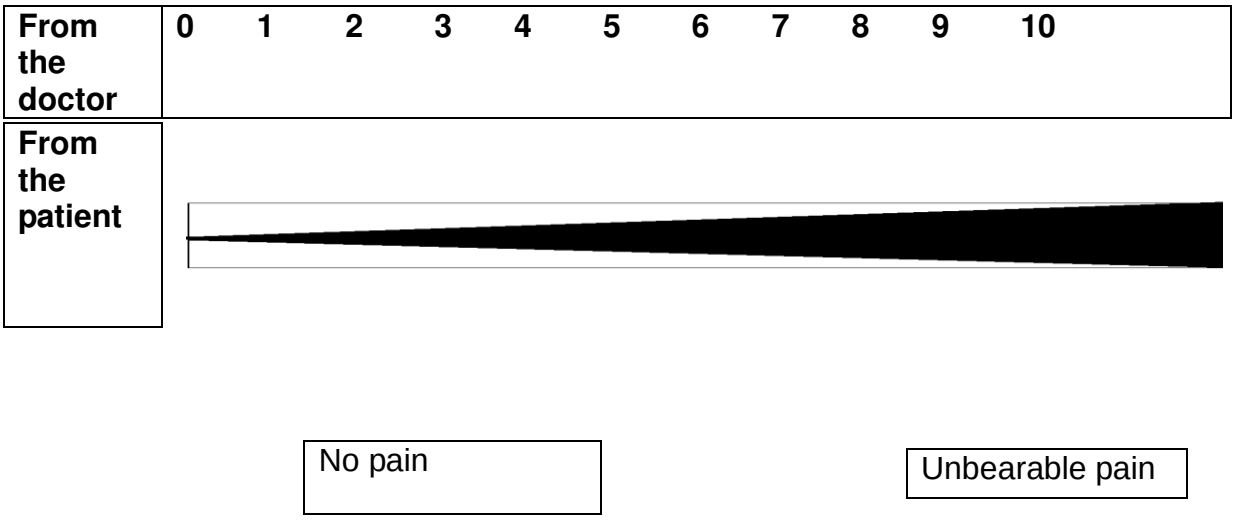


Fig. nr.55 :Scala Vizuală Analogă (SVA)n – reprezentarea gradului durerii

Table no. LXXIV. Centralization of the values of VAS scale for two groups of study

1 h	*P+AINS*	*P+AINS+Op*
Arithmetic mean	4	3.81
Variant	0.86	0.67
No of elements	430	432
p	0.08623	
2 h	*P+AINS*	*P+AINS+Op*
Arithmetic mean	3.242424242	3.149253731
Variant	0.463403263	0.431931253
No of elements	430	432
p	0.177358837	
4 h	*P+AINS*	*P+AINS+Op*
Arithmetic mean	2.696969697	2.597014925
Variant	0.42983683	0.3654455
No of elements	430	432
p	0.148450209	
6 h	*P+AINS*	*P+AINS+Op*
Arithmetic mean	2.166666667	2.074626866
Variant	0.294871795	0.251922207
No of elements	430	432
p	0.12184118	
12 h	*P+AINS*	*P+AINS+Op*
Arithmetic mean	1.742424242	1.611940299
Variant	0.255710956	0.271370421
No of elements	430	432
p	0.073064431	
24 h	*P+AINS*	*P+AINS+Op*
Arithmetic mean	1.318181818	1.134328358
Variant	0.251048951	0.118046133
No of elements	430	432
p	0.007492854	

Data analyze, statistics and graphics shows a decreasing value of pain score in VAS during 24 hours of 4.00 +/- 0.92 in the first hour up to 1.31 +/- 0.50 at 24 hours in the group which received NSAID added to paracetamol and a decrease of 3.79 +/- 0.82 in the first hour up to 1.13 +/- 0.34 at 24 hours in the group supplemented with opioid.
Comparing directly the evolution of the pain in the two groups of study we can observe that despite the differences of the medias are little, there are keeping for all 24 hours. A highly statistically significant difference (p=0.007) is observed at 24 hours, when the media difference is almost 14%.

6.13.4. Postoperative nausea and vomiting

PONV is a very unpleasant side effect of general anesthesia. If associated with a long fasting there is a reason to increase the length of hospitalization or to readmit the patient in the hospital. Patient most predisposed to PONV are with pathology of internal ear.

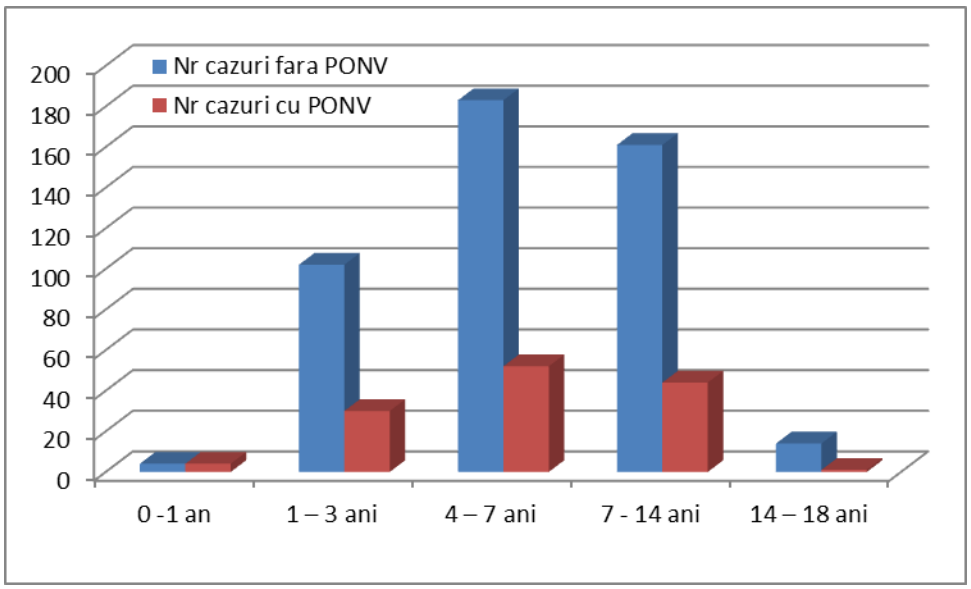


Fig. no. 69. Distribution by age of the children in the group with inhalatory general anesthesia with IOT

6.13.5 Postoperative bleeding

Post tonsillectomy the most frequent complication is postoperative bleeding, with an incidence of 0.1-12.1% of total cases. It is not an anesthesia complication, but requires a vigilant anesthetist, because might need a surgery again to control bleeding.

9. CONCLUSIONS. RECOMMENDATIONS

This study included all ENT pediatric patients for a 5 years period which had surgery under general anesthesia. There were various situations.

1. Distribution per years showed an ascendent trend of surgeries, from 263 cases in 2007 to 371 cases in 2011.
2. High number of scheduled cases received general anesthesia, with a majority of adenoids cases followed by a number of 209 cases of medical or surgical emergencies.
3. Cases were preponderant from urban areas (1187) and 337 rural areas, 77.89% compared to 22.11%. this might be due to health education accessibility.
4. The most frequent associated pathology to ENT pathology were asthma (98 cases), special needs – neurologic underdevelopment (25 cases), epilepsy (24 cases). This is conditioned to ENT pathology interrelated to different nearby or distal organs pathology. Nasal obstruction is the first element in a physio-pathology chain which involves, in this order, nostrils, nasal cavity, rhino-pharynx, internal ear, oro-pharynx, hypo-pharynx, involving larynx, trachea and bronchi, or oesophagus.
5. Anesthetic management in pediatric ENT surgery requires a good understanding of physiology, pathology, pharmacology related to patients age and comorbidities.
6. An acute phase of disease in ENT area delays a surgical procedure.
7. Decision to give a general anesthesia follows a good preoperative assessment of the anesthetist – surgeon team.
8. Preanesthetic medication improves outcome. From a total of 1524 patients, 1400 cases received medication, 124 did not received any. High percentage of agitated patients were in non-premedicated group, respectively grade 4 (3.23%) and grade 3 (11.29%), comparing to premedicated group, 1.50% of grade 4 and 7.36% of grade 3.
9. Preoperative or postoperative agitation influences outcome. Therefore, family has to be a partner in management of child, explaining each and every step.
10. General anesthesia length is estimated preoperative and is adjusted to surgery length. Initial anesthetic management has to be quickly adapted to possible incidents and accidents: difficult intubation, allergic reactions, bronchospasm, bleeding, intraoperative incidents and accidents due to bleeding for example.
11. Particularity of ENT surgery is that most of the procedures are short to medium length, so anesthetic management has to include potent, short acting, minimum side-effects drugs. And so more cases are daycases, decreasing costs of hospitalisation, and a higher satisfaction for patient and family.
12. Parameters used intraoperative and postoperative have to provide the safety of the patient, comfort for surgeon, due to limited and common area used by anesthetist and surgeon.
13. Medical and surgical emergencies have to manage usually acute respiratory failure by airway obstruction, with vital consequences. Main responsibility for anesthetist is to provide oxygen to patient and protect airway.
14. For an adequate airway management the anesthetist has to be experienced. Extremely useful are protocols and algorithms elaborated by anesthesia societies, and a good teamwork with the surgeon.
15. Shortening the response time for emergencies, there have to be a difficult airway management trolley and a trained staff. The trolley must include endotracheal tubes of different sizes, stylets, bougie, laryngeal masks, combitube, flexible fiberscope, laringoscopes of all types and sizes. Video-laryngoscopes and video-fiberscopes are welcome.

16. Analgesia and pain management has to be adjusted to surgery.
17. Experience showed that pre-emptive and multi-modal analgesia gave best results. Pain after ENT surgery includes a deficiency in oral feeding, so longer hospitalization.
18. There is high incidence of postoperative nausea and vomiting due to blood and secretions in a high reflexivity area of mouth, pharynx and larynx. To improve numbers there is required a good treatment of PONV, according to guidelines.
19. Postoperative bleeding in ENT pediatric surgery has specificity because covers very dense vascularized areas and bleeding may be underestimated because patient swallows blood. Therefore, the anesthetist must be prepared for a reintervention for a full stomach and hypovolemic patient.

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