

CLINICAL ASSISTANCE ALGORITHM FOR THE DENTAL IMPLANT CANDIDATE

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ABSTRACT The anesthesia of the dental implant candidate is challenging, both from the point of view of the patient's comfort and of the dentist's (the patient needs to sleep, not to feel pain, to breathe efficiently, to have the deglutition reflex and to execute simple orders given by the implantologist). A lot of 120 patients was used for this study - candidates for dental implant who were subject to anesthesia. The patients were divided into two lots: Lot A - 20 patients sedated using the inhale-sedation method and Lot B - 100 patients who were administered intravenous general anesthesia. When the surgical maneuvers were initiated, the effect of Midazolam was augmented with 1 g of Algocalmin (which is repeated every 1 and ½ hours - in case of interventions that exceed 2 hours). As a continuation dose, Midazolam was administered in a concentration of 0.1 mg/kg/h, with a total dose of 3.5 / 7.5 mg (usually, no doses in excess of 5 mg are necessary). However, the patients react differently to Midazolam, which is why the dose needs to be adjusted depending on the metabolic capacity of each patient. In case of patients over 60, 1 mg is administered initially (usually no doses in excess of 3.5 mg are necessary).

The choice of sedation and general anesthesia belongs exclusively to the ATI doctor who, following a rigorous pre-anesthetic consult, will decide upon the most suitable and risk-free method that needs to be used during the surgical intervention.

Key words: dental implant, anesthesia, inhalosedation, edentulous, general status

INTRODUCTION:

The anesthesia of the dental implant candidate is challenging, both from the point of view of the patient's comfort and of the

dentist's (the patient needs to sleep, not to feel pain, to breathe efficiently, to have the deglutition reflex and to execute simple orders given by the implantologist), as well as of the

conditions under which it is performed (in patient care, where no advanced devices and methods are available in case of cardiac or respiratory decompensation which would require resuscitation)[1,2].

Besides the aspects related to hypnosis, analgesia and preservation of the vital functions, anesthesia involves an efficient correction of the acid-basic and hydro-electrolytic balance which, in the absence of “general recipes”, varies from one patient to another, depending on their status[3,4]. A thorough pre-anesthesia consult, doubled by a careful monitoring during the intervention and mainly during the administration of drugs, as well as in the following period can prevent certain complications and emergencies[5,6].

MATERIAL AND METHODS:

A lot of 120 patients was used for this study - candidates for dental implant who were subject to anesthesia. The patients were divided into two lots: Lot A - 20 patients sedated using the inhale-sedation method and Lot B - 100 patients who were administered intravenous general anesthesia.

As a working method, we used all the information of the pre-anesthesia consultation, analysis results, as well as the personal clinical follow up of patients.

The motivation of the study was the clinical observation of the multiple favorable effects given by the two types of general anesthesia, which transformed the implantology maneuver into a test case, both for the patient and for the dentist, in a “pain free” operation with a reduced degree of difficulty and of a safer nature.

RESULTS:

We found a prevalence of females in proportion of 54% compared to 46% of male patients, aspect that influences the predominance, generally of the aesthetic characteristics for the future prosthetic restorations, data that interfere with the defining characteristics of morpho-functional prosthetic field, key issues underlying the choice of therapeutic solutions and a plan treatment of choice in accordance with the type of edentulous and complications installed, and the general condition, too(Fig.1).

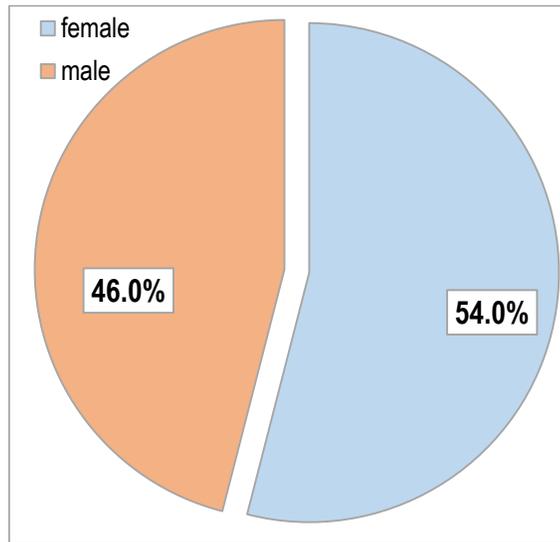


Fig. 1 Sample`s structure on sexes

From the group of patients rated, mostly came from urban - 70%, 30% coming from rural, the provinience factor related to life and

work conditions, elements that are reflected in the oro-dental status, equally influencing the therapeutic approach .

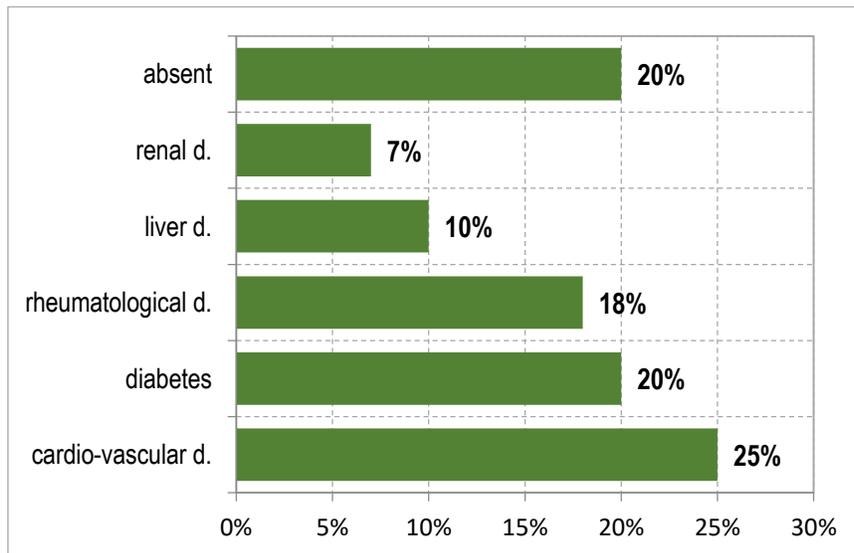


Fig. 2 The overall state of the batch of patients.

General condition influences the complexity of implant-prosthetic surgical maneuvers .20% of patients have a good general status, 25% have a general status

affected by various forms of cardiovascular disease, 20% have diabetes and rheumatic 18 % of patients in the study group shows liver disease and 7% kidney disease (Fig. 2).

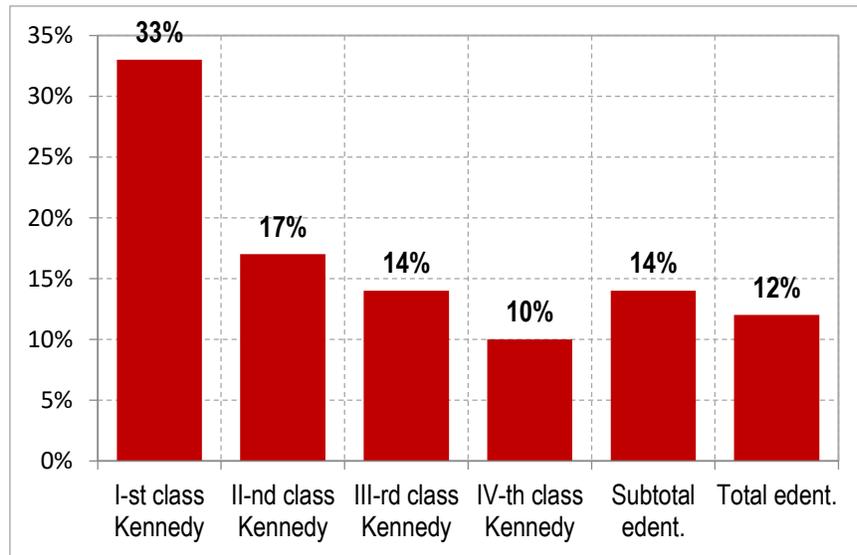


Fig.3 The Prevalence of edentation classes

There is a considerable prevalence of Class I Kennedy 33%, followed by Class II Kennedy 17%, Class III Kennedy and subtotal edentation are found in 14%, Class IV Kennedy has a percentage of 10% and the total edentation 12%(Fig.3).

In case of Lot A, the method of inhalo-sedation was used. The main agent used at the present is, in fact, a mixture made of N2O and O2 administered by means of a modern device, that mostly eliminates the risks of N2O overdose. No injections or perfusions are required, the side effects being limited to a systematic level and, in particular, to the liver,

kidneys, brain or cardiovascular and respiratory system. Inhalo-sedation can replace local anesthesia for certain dental treatments due to the analgesic qualities of N2O. Nevertheless, monitoring the vital functions of the patient is a must, especially in case of patients with co-morbidities.

In case of lot B, we used the method of intravenous general anesthesia. We used two drug combinations – on a sub-lot of 60 patients we used Midazolam (benzodiazepine) augmenting its effect by means of an analgesic (Algoalmin) and at the end of the intervention anti-inflammatory corticosteroid

(Dexamethasone) was administered. In case of patients under 60 we initially administered 2 mg of Midazolam (charging dose) dissolved in 10 ml of physiological serum - slow administration, approximately 2 minutes. The administration maneuver of Midazolam was performed 5-10 minutes prior to the intervention.

DISCUSSIONS:

When the surgical maneuvers were initiated, the effect of Midazolam was augmented with 1 g of Algocalmin (which is repeated every 1 and ½ hours - in case of interventions that exceed 2 hours).

As a continuation dose, Midazolam was administered in a concentration of 0.1 mg/kg/h, with a total dose of 3.5 / 7.5 mg (usually, no doses in excess of 5 mg are necessary). However, the patients react differently to Midazolam, which is why the dose needs to be adjusted depending on the metabolic capacity of each patient. In case of patients over 60, 1 mg is administered initially (usually no doses in excess of 3.5 mg are necessary). The advantage of the method is that Midazolam produces anterograde amnesia (frequently, this effect is desirable in situations such as prior to and during the diagnostic and surgical procedures) whose duration is in direct proportion to the administered dose. Prolonged amnesia can

represent a problem in case of patients in outpatient care who are discharged after the intervention[7,8]. After the parenteral administration of Midazolam, patients need to be discharged from the cabinet only in the presence of an attendant.

At the end of the intervention, 8 mg of Dexamethasone was administered to reduce local and general inflammatory effects.

In case of the second lot – 40 patients, we used benzodiazepine (Midazolam) in combination with an opioid (Fentanyl) and an intravenous anesthetic (Propofol). The Midazolam dose was of 1 mg in the beginning, followed by a small dose of Fentanyl: 2 µg Fentanyl/kg (1 ml=50 µg). Fentanyl can depress respiration; this situation can also occur after a period of time, following the surgical intervention. That is why, after the surgical intervention, the patient will remain for a while under medical observation. Fentanyl administered in small doses is useful in minor, but painful surgical procedures. The Fentanyl ampoule has 0.05 mg/ml (for a patient of 70 kg 0.1 mg = 2 ml was administered). The required amount of intra-surgery opioid depends on the personal pain threshold, on the painful stimuli as number and intensity and on the duration of the intervention.

The interventions took place under

conditions of oxygen therapy (nasal glasses).

The patients were monitored during the entire intervention (EGG, cardiac frequency, blood pressure, partial oxygen saturation, respiratory frequency), any modification of the vital parameters being immediately

corrected[9,10].

The patient reported to the clinic after a 6 hours fast prior to the intervention. The patient was allowed still water 2 hours prior to the intervention.

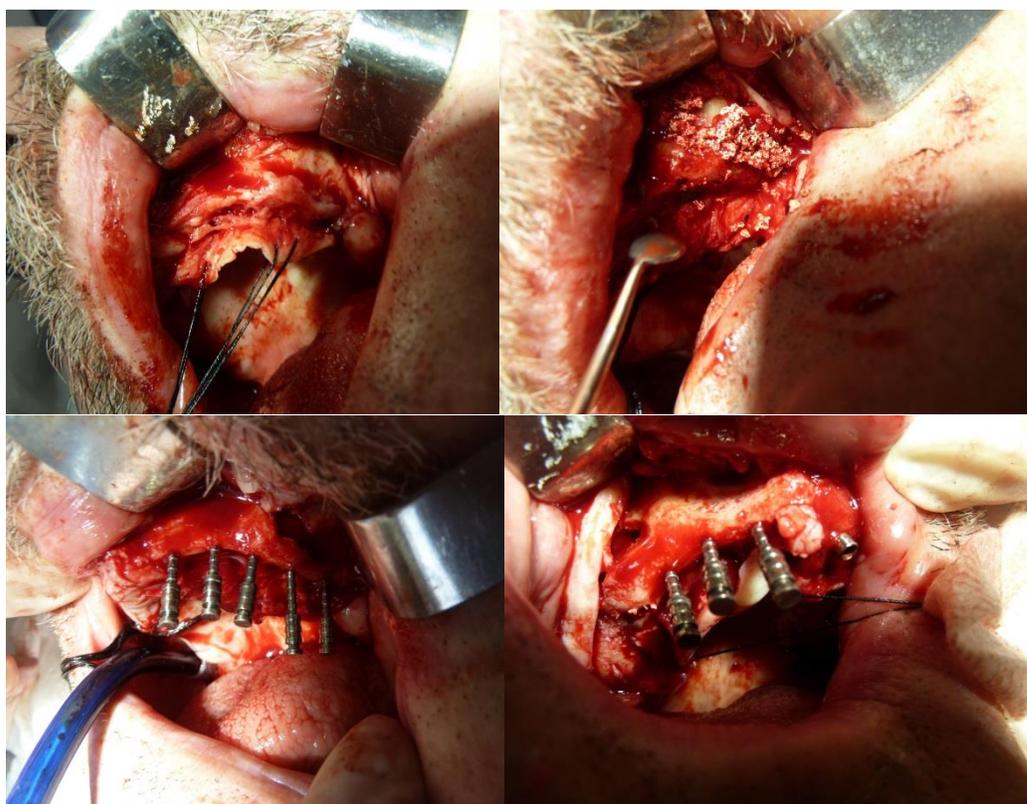


Fig. 4 Clinical aspects of surgical intervention

In case of diabetic patients, a rigorous investigation of the health and glycemia values was conducted so as to have a stable, well controlled glycemia at the moment of intervention, and in case of interventions exceeding 2 hours, the value of the glycemia was checked at regular intervals (2 hours).

In case of patients with cardiovascular pathology, the continuous administration of the chronic cardiologic treatment was recommended, with a reevaluation at the cardiologist, prior to the intervention, but with the interruption of the anticoagulant treatment 5 days prior to the surgical maneuvers.

A special attention was paid to the patients with pulmonary pathology, who presented various lung diseases[11,12]. The radiological and specialized evaluation was included in the pre-anesthetic consult, with the continuous administration of the chronic treatment. In case of certain lung conditions, as well as in the case of other pathologies, neglected by specialized consultation, the balance and determination of an optimum treatment scheme preceded the intervention. After the intervention the patient was administered anticoagulant, not right away but after 2-3 hours from the intervention, especially in case of patients with higher risk (cardiac pathology, obesity, patients with prostheses: valve or orthopedic, etc.)

Antibio-prophylaxis was conducted in case of all patients, using two election antibiotic : clindamycin (1.2 - 1.8 g, fractioned in two or three intakes).

Conclusions:

The choice of sedation and general anesthesia belongs exclusively to the ATI doctor who, following a rigorous pre-anesthetic consult, will decide upon the most suitable and risk-free method that needs to be used during the surgical intervention.

The careful monitoring of the patient and the proper equipment of the dental cabinet are key elements of a therapeutic success as far as sedation and anesthesia are concerned.

The method of inhalo-sedation can be used in case of minor interventions in the dental sphere, with a low bleeding potential and where the surgical approach is not extended surface wise, and the patient shows a moderate to medium anxiety level. At the same time, the absence of equipments from the dental cabinets in Romania regarding this type of device limits the use of this method.

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