

## FOUR-HANDED DENTISTRY – TASKS OF TEAM MEMBERS AND GENERAL RULES FOR INSTRUMENT TRANSFER

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### ABSTRACT

Four-handed dentistry is defined as a team-work style applied during dental care, in which the dentist is permanently aided by a dental assistant, who is actively involved in performing the dental maneuvers done to the patient. In order to implement most efficiently four-handed dentistry in dental practice, planning is essential – duties and tasks of team members should be well defined, and also the parameters of the interaction between the dentist and dental assistant, for good coordination and complementarity while delivering dental care. Teamwork skills need time to develop, the exercise and experience contributing to real improvements, leading progressively to the desired real four-handed dentistry.

**Key words:** ergonomics, dentist, dental assistant, motion economy

### INTRODUCTION

Four-handed dentistry is defined as a team-work style applied during dental care, in which the dentist is permanently aided by a dental assistant, who is actively involved in performing the dental maneuvers done to the patient. Its name is suggestive – beside of the two hands of the dentist, there are other two hands (i.e., of the dental assistant) that actively participate for delivering dental care to the patient.

Four-handed dentistry can positively contribute to the efficiency of the clinical practice. For its implementation, for a coordinated work of both parties, the tasks should be carefully planned (1). This working style may be seen as optional for many dental procedures, but extremely necessary in some situations, e.g., endodontic treatment when using dental operating microscope.

### FOUR-HANDED DENTISTRY – DUTIES AND TASKS OF TEAM MEMBERS

For an efficient implementation of four-handed dentistry, both team members participating in delivering dental care i.e., the dentist and dental assistant, should have well defined and complementary tasks. In this regard, the hierarchy of the roles played is the following: the dentists dictates, and the dental assistant follows.

During the dental procedure, dentist's most important duties and tasks should be linked to delivering dental care to the patient, according to his training and best of knowledge. The four-handed team-work style aims increasing dentist's focus on the specific medical maneuvers done to the patient, and decreasing his role played in other types of activities.

Even so, in order to maximize the previous, to have a real four-handed dentistry, the dentist must coordinate the entire process while delivering dental care. The dentist is the one that should establish the work protocol, the necessary instruments and materials, the treatment steps corresponding to dental maneuvers (is better if it is a written version of it). For each patient, the dentist should highlight the treatment conduct particularities, if necessary (e.g., anesthetic used). The dentist must send clear indication when desiring something during treatment delivery (e.g., clear signals should be defined and used for instrument exchange).

Dental assistant's most important duties are:

- knowledge of the dental procedures conducted in the dental practice;
- knowledge of the particularities of conducting the dental procedures by the dentist he is teamed with;
- assist the dentist during the dental procedure – the dental assistant should anticipate the dentist's needs, promptly respond to dentist's requests, adapt to situation dynamics, and perform tasks without disturbing unmotivated the dentist (e.g. serving instruments and materials or manipulation of high volume evacuators should not interfere with the dentist's view of the operating field or limit his movements).

The dental assistant should actively participate to delivering dental care, by performing tasks in accordance to her training and dentist's requests.

Most important tasks of the dental assistant for dental office's preparation for delivering dental care are the following:

- preparing the dental office and especially the work area so that it is cleaned and disinfected;
- preparing and arranging the necessary

instruments, materials and equipment for the dental procedure that will be conducted, so the working area is properly equipped and well organized;

- receiving and preparing the patient for the dental procedure - preliminary positioning and protection (dental bib, safety glasses).

Most important tasks of the dental assistant during dental procedure are the following:

- serve, exchange and take the dentist's instruments;
- prepares and serves dental materials;
- position and reposition of the dental unit lamp according to dentist's position;
- washes and dry the working field (e.g., the tooth) and the dental mirror, in order to provide for the dentist a clean working area and ensure good visibility on the working field;
- moisture control – shape and position the saliva ejectors; handles high-volume evacuators;
- soft tissue retraction on her side, relatively to the working field (e.g. when using the high-volume evacuators or retractors like Farabeuf retractor);
- light curing of dental materials;
- change of dental burs;
- help the dentist to place the rubber dam.

Ideally, the dental assistant should take as many of the tasks she can legally perform, within the limits of her training and competence.

## **GENERAL RULES FOR INSTRUMENT TRANSFER**

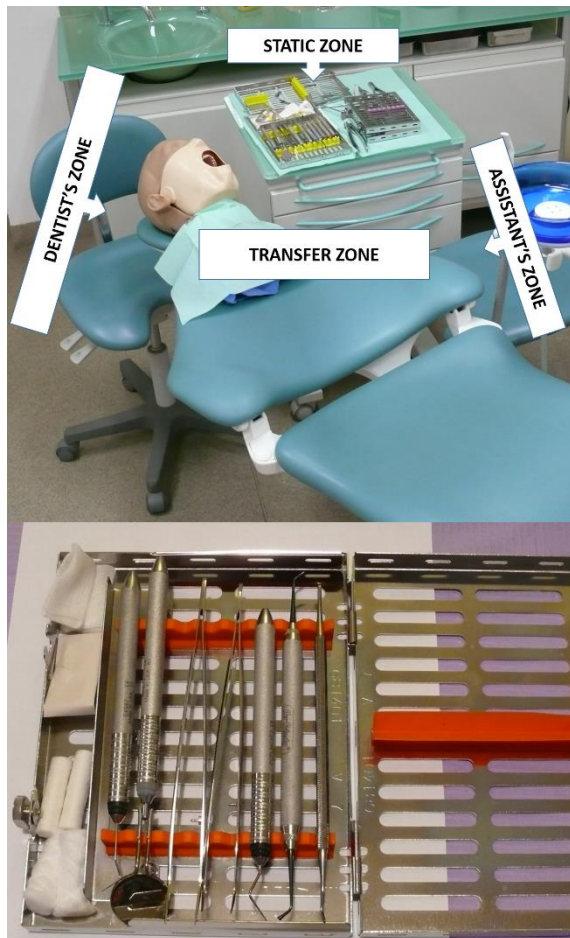
In order to have a continuous work-flow, instrument transfer should be done in accordance with a few very simple rules. These are the following.

**1<sup>st</sup> rule.** Ideally while delivering dental care the dentist should be able to focus nearly

exclusively on the medical part of the dental procedure, more precisely on the maneuvers done to the patient, on the working field.

The number and magnitude of motion done by the dentist during instrument exchange should be minimized - use motion economy (2). The dentist should be able to maintain his eyes on the treatment site during instrument transfer. The dental assistant makes wider movements and generally the majority of the movements during instrument exchange.

**2<sup>nd</sup> rule.** The dental instruments should be placed favorable to the dental assistant, as she will be the one that will pick them and deliver to the dentist, i.e. in the static zone (3) (Fig. 1).



**Figure 1. Placement of instruments favorable to the dental assistant, in the static zone, arranged in the order of use,**

**from left to right, with the active part directed toward the dental assistant**

**3<sup>rd</sup> rule.** Instrument transfer takes place in the transfer zone, near the working field.

Instrument transfer should be done under the level of patient's mouth, and not over the patient's face, by this decreasing the risk of patient's harm and preventing patient's anxiety reactions related to seeing the dental instruments.

**4<sup>th</sup> rule.** The dental assistant should serve, exchange, and take dentist's instruments – the right dental instrument, at the right time.

The dental assistant can serve the right instruments, considering the high degree of predictability in most clinical situation for a particular dental procedure, and also considering the following: dental assistant has basic dental training; she knows the dental procedure and the working protocol with the particularities of the dentist she's working with; she permanently assists the dentist, sees dental act development, so in the majority of the time she can adapt to situation dynamics.

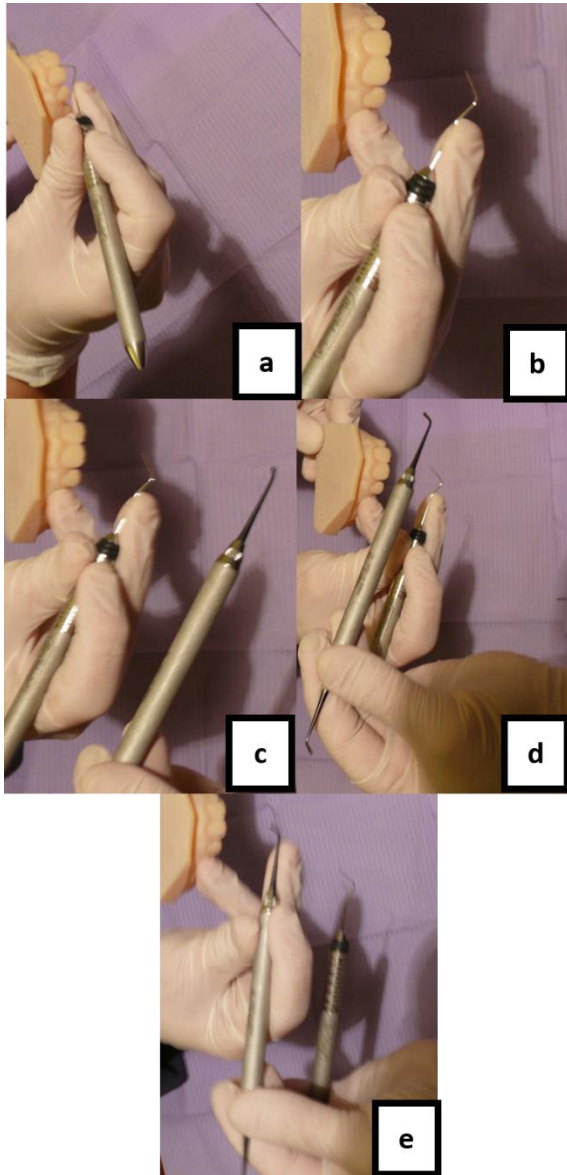
In order to deliver the instrument at the right time, the dental assistant should prepare to serve the following instrument, and standby in order to initiate it at the right time, which should be clearly signaled by the dentist, the command ideally being a non-verbal signal.

**5<sup>th</sup> rule.** Dental assistant should serve the dental instrument to the dentist by placing it so he can easily and directly grip it as he will use it.

The dental assistant should let free the handle area where the dentist will grip the instrument. The active part of the instrument should be positioned corresponding to the working area (for the maxilla or the mandible).

If desired, when exchanging instruments that are used in the modified pen grip, the

dentist should be able to maintain the support of the hand, by maintaining the position of the rest finger/fingers of the working hand, in other words instrument exchange to be accomplished with a minimum of motion by the usage of only some of the fingers of the working hand (Fig. 2) (4; 5).



**Figure 2. Exchanging instruments used in modified pen grip, with maintaining support: (a) while the dentist works, the dental assistant prepares for serving the next instrument; (b) the dentist gives a non-verbal signal for exchanging**

**instruments (the dentist moves the active part of the instrument away from the working area, taking it outside the patient's mouth, while maintain the support with the rest fingers); (c) the dental assistant approaches, keeping the next instrument with the first three fingers of her left hand; (d) the dental assistant takes the instrument from dentist's hand with the fifth finger of her left hand; (e) the dental assistant puts the other instrument in dentist's hand, so he can hold it in modified pen grip**

**6<sup>th</sup> rule.** For a safety instrument exchange the dental assistant, respectively the dentist does not release the dental instrument until feeling with certainty that the other team member firmly grips the instrument.

**7<sup>th</sup> rule.** Instrument exchange should be done without unjustifiably disturbing dentist's activity.

Instrument exchange should not interfere with dentist's view of the working field. Dentist's and dental assistant's hands should not cross each other's. During instrument exchange, instrument handles should be kept parallel - these should not cross or intersect.

## CONCLUSION

In order to implement most efficiently four-handed dentistry in dental practice, planning is essential – duties and tasks of team members should be well defined, and also the parameters of the interaction between the dentist and dental assistant, for good coordination and complementarity while delivering dental care. Teamwork skills need time to develop, the exercise and experience contributing to real improvements, leading progressively to the desired real four-handed dentistry.

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