Dentistry in military health support: innovation for military perspective

La dentisterie dans le soutien de santé militaire: l'innovation au service des militaires

NARENDER SINGH - INDIA

Summary

Ultimate goal of military dentistry is to achieve and maintain a biting fit military. Military dentistry is the core competence of the military dentist. They handle most challenging cases for treatment and rehabilitation to the extent possible. However, dental treatment is inherently time consuming and requires a number of visits by patients. This can be a justification for quality treatment in civilian set up. Military perspective demands military set up to be quick, accurate and effective; dentistry is no exception. Troops once deployed cannot move time and again. This results in their delay in treatment and sometimes compromised treatment leading to imperfect outcome of treatment. In order to provide best military health support possible, dentistry has to use innovation to suit to the military perspective. Thus, military dentistry has to be fast, accurate and effective. This can be only possible by continuous updation, modification and innovation by military dentists. This presentation suggests some of the modifications, research and innovations areas possible in military dentistry.

The military dentistry needs to have a paradigm shift in its perspective of civil dental hospital culture to fast and accurate dentistry in constrains of operational deployment in field and mobile set up. Military dentist has to be a leader in innovation and not merely a follower of his civil counterpart. He has to be instrumental in innovation of materials and methods for fast and accurate dental treatment.

Keywords: Military, dentistry, fast, accurate, innovation, perspective.

Résumé

L'objectif ultime de la dentisterie militaire est d'obtenir et de maintenir une bonne occlusion. La dentisterie militaire est la compétence principale du dentiste militaire. Il prend en charge les cas les plus complexes en matière de traitement et de réadaptation, dans la mesure du possible.

Cependant, les soins dentaires sont par nature chronophages et nécessitent de nombreuses consultations ce qui peut justifier la réalisation des soins en milieu civil. Le contexte militaire exige que les interventions militaires soient rapides, précises et efficaces ; la dentisterie ne fait pas exception. Une fois déployées, les troupes ne peuvent pas se déplacer constamment ce qui entraîne des retards de traitement et parfois des traitements compromis avec des résultats imparfaits. Afin d'offrir le meilleur soutien de santé militaire possible, la dentisterie doit innover pour s'adapter au contexte militaire. Ainsi, la dentisterie militaire doit être rapide, précise et efficace. Cela n'est possible que grâce à une mise à jour continue des pratiques et la recherche d'innovations continues de la part des dentistes militaires. Cette revue présente quelques pistes de modifications, de recherche et d'innovation en dentisterie militaire.

La dentisterie militaire doit adapter radicalement ses pratiques par rapport à la culture hospitalière dentaire civile, pour offrir des soins dentaires rapides et précis, malgré les contraintes du déploiement opérationnel sur le terrain et en situation mobile. Le dentiste militaire doit être leader en matière d'innovation et non un simple suiveur de son homologue civil. Il doit jouer un rôle déterminant dans l'innovation des matériaux et des méthodes de soins adaptées au contexte militaire opérationnel.

Mots-clés : Militaire, dentisterie, rapide, précis, innovation, adaptation.

Introduction

The ultimate goal of military dentistry is to prevent wastage of manpower and maintain a biting fit military (1). With advancement in dentistry, there is more and more specialization in dentistry. This has resulted in improvement of prognosis and better treatment in most complicated dental problems. Military dentistry, the core competence of the military dentist is also following the same path. With this more and more specialization military dentists handles most challenging cases for treatment and rehabilitation to the extent possible. However, dental treatment is inherently time consuming and requires a number of visits by patients. This can be a justification for quality treatment in civilian set up. Any military set up demands to be quick, accurate and effective; dentistry is no exception. Troops once deployed cannot move time and again. This results in their delay in treatment and sometimes compromised treatment leading to imperfect outcome of treatment. This is a typical problem in military dentistry with no solution so far. Despite of understanding this problem we are not able to find a solution even with our continuous research and advancement in technology. This is due to our conventional perspective. Our perspective in military dentistry has always carried out its research and publication like any civil dental hospital set up and not in its core competence of military requirements of dentistry. This approach has not give unique foundation and development for real need of military dentistry. Due to this military dentistry which has potential to contribute in all branches of dentistry especially to work faster in resources constrained environment has not evolved as a leader so far. This paper is an attempt to bring a paradigm shift in our perspective through shifting the focus of military dentistry from civil dentistry culture to a fast and accurate dentistry suiting military set up.

Dentistry in Military Health Support

Military dentistry delivers high-end clinical services through primary dental units, secondary and tertiary dental centers (2). To maintain a biting fit military we utilise a three prong approach. First prong focuses on prevention. This focuses on prevention of dental diseases. In this troops are educated on oral hygiene, healthy habits and dietary intakes followed by periodic checkup. Second prong focuses on control of disease and discomfort. In this diseases and discomfort of troops are removed by drilling, filling and surgical removal of diseased tooth and surrounding structures. The majority of treatment falls into this group (3). Third prong focuses on rehabilitation. This focuses on replacement of lost oral and paraoral structures to near normal form and function.

Military Perspective in Dentistry

The basic requirement of any military establishment is fast, accurate and effective. These basic attributes of military fully apply to dentistry in military set up. Dentistry has to imbibe these military attributes to merge in any kind of military operation. The paradigm needs to shift from high quality peace time dentistry to high quality faster dentistry in field and operational set up for affectivity in military. In performing military dentistry effectively, this new perspective should focus research to make dental treatment faster with minimum sittings.

FIG1. Portable dental chair and unit

To achieve faster dentistry improvement required in equipment, material and technique. Some of the research focuses in equipment and treatment protocols for future military dentistry proposed by author are as follows:-

a. Compact, Portable and Robust Equipment. All equipments to be used in military dentistry require frequent and faster movements in difficult and hostile terrain. This is in total contrast to civil setup which is rarely moved. Thus, the various equipment of diagnosis and treatment needs to be compact, portable and robust to be effectively employed in military dentistry.

b. Single Sitting Root Canal Treatment. Deep caries are most common cause of severe pain. In these cases root canal treatment is the best and most conservative treatment of choice. Root canal is conventionally performed in multiple visits. The problem with this treatment option is multiple sittings requiring more time. Thus, this best treatment becomes impractical with military setting. The treatment option to overcome this disadvantage is single sitting root canal treatment. The advantage of single sitting endodontic therapy is a conservative, chemo-mechanical preparation and obturation of the root canal system in a single visit (4). The literature clearly advocates it has success similar to multiple sitting root canal treatment (2, 5).This should be inculcated in military dentistry routinely and should be further refined.

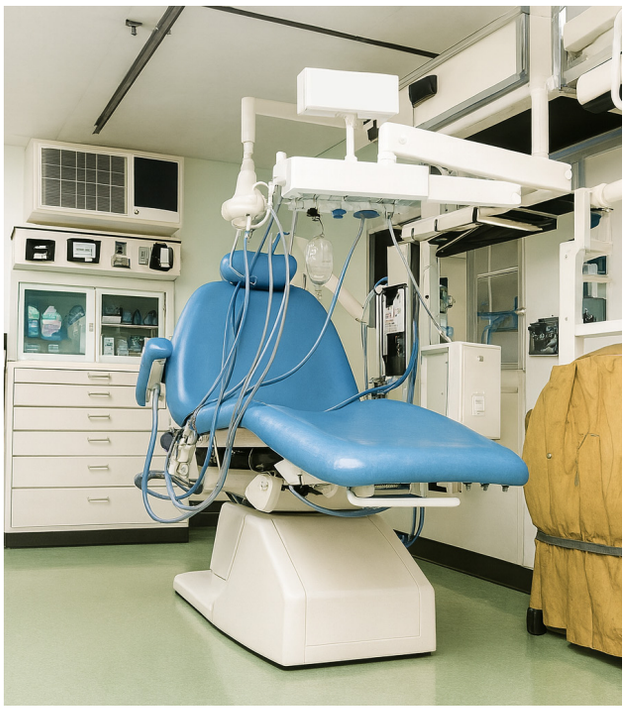

FIG 2. Mobile dental clinic

c. Immediate Implant Placement. Today the best option to rehabilitate a missing tooth is by implant supported restoration. The biggest drawback of this is multiple sittings and surgeries leading to more time consuming treatment option. This makes it unsuitable in military setting. The alternative option available is immediate implant placement at the time of extraction. This saves a lot of time and suits military setting. The available papers in the literature reveals that immediate implant placement have results comparable to those obtained with delayed implant placement (6). However, technical complications have been described regarding this technique. Further long-term, randomized clinical trials are needed to overcome these technical complications. This is where research needs to be carried in military dentistry.

d. Immediate Implant Loading. Loading of implant with restoration takes time ranging from 3-6 months depending on site of placement. This requires a number of sittings and time on part of patient. This is also against the basic requirements of military setting. This can be overcome by immediate loading of placed implant. Studies has shown that single-tooth restorations placed into immediate occlusion via Provisionalisation has given success rates similar to those implants restored with light or no occlusal forces(7-12). Other studies of single-tooth restorations have given lower success rates when placed into immediate functional occlusion (13-16). Thus, more detailed studies are needed to assess the role of occlusion and a well refined protocol in these restorations. This refinement can be achieved through more research studies in military dentistry.

e. Referral for More Specialised Treatment. The patient with lost major part of maxillofacial structures requires rehabilitation with complex and time consuming procedures. These patients should be referred to tertiary care hospital located far from operational areas as they have no faster option of treatment.

f. Research and Publication. Most of the research in military dentistry is carried like in civil dental setup. This research results do not focus on problems peculiar to military dentistry. Moreover, the results of these researches cannot be utilised fully in military dentistry. The research in military dentistry should be focused on fast, accurate and effective treatment. Then, only military dentistry will be able to solve its own problems and become leader in practicing dentistry in resource constrain environment.

Conclusion

The military dentistry needs to have a paradigm shift in its perspective of civil dental hospital culture to fast and accurate dentistry in constrains of operational deployment in field and mobile set up. Military dentist has to be a leader in innovation and not merely a follower of his civil counterpart. It has to be instrumental in innovation of equipments, materials and methods for fast and accurate dental treatment. This paper is an attempt towards shifting the focus of military dentistry from time consuming quality treatment of civil dental hospital culture to a high quality fast and accurate dentistry suiting military set up.

FIG 3. Mobile dental van for forward areas

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LT COL NARENDER SINGH, BDS, MDS, DDM, GCPP (D &FA)

Lt Col Narender Singh was born on 08 Nov 1980. He completed his specialization in Prosthodontics at the Armed Forces Medical College, Pune. The officer obtained his Diploma in Defence Management and a Graduate Certificate in Public Policy (Defence and Foreign Affairs). He has performed rehabilitative dentistry and administrative duties in both domestic and international appointments. The officer has more than 20 years of experience in the Indian Armed Forces. He has also served as a military dentist in mountains, deserts, and plains. The officer has a keen interest in warfare, tactics, military medical ethics, and military medicine, in addition to maxillofacial rehabilitation. He is presently serving as an Instructor at the Officers Training College, Army Medical Corps Centre and College.