

Optimizing oral health care for patients in permanent vegetative state: A multidisciplinary approach

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Abstract. This article addresses the complex challenges of maintaining oral health in Permanent Vegetative State patients, a demographic often overlooked in dental care due to their unique needs and limitations. Permanent Vegetative State patients, characterized by their lack of consciousness and reliance on artificial feeding methods such as enteral feeding via percutaneous endoscopic gastrostomy, face significant oral health challenges, including increased risk of inflammation, dental and oral trauma, gastroesophageal reflux disease, and complications arising from poor personal oral hygiene. This paper presents a comprehensive oral care protocol tailored specifically for Permanent Vegetative State patients, drawing from practices used for Traumatic Brain Injury patients. The protocol emphasizes the need for a multidisciplinary approach, integrating the expertise of dentists, speech therapists, and nurses to manage the complex oral health needs of PVS patients effectively. Key components of the protocol include the use of advanced oral hygiene technologies, such as sonic toothbrushes, and strategies to minimize aspiration risks during dental procedures. The protocol also recognizes the psychosocial impact of oral health in PVS patients, highlighting the role of oral care in improving their overall quality of life as perceived by their caregivers. This article aims to shed light on the often-neglected aspect of oral health in PVS patients, proposing a specialized care approach to improve their well-being and facilitate better healthcare outcomes.

Key words: permanent vegetative state, oral health, multidisciplinary care, enteral feeding, traumatic brain injury, dental hygiene, gastroesophageal reflux disease, aspiration risks

Maintaining oral health in patients in Permanent Vegetative State –PVS– presents significant challenges, not only due to the inherent limitations of PVS patients who lack the consciousness for self-care in oral hygiene, but also due to a range of potentially serious complications (1). It is crucial to acknowledge that the majority of PVS patients require artificial feeding (2), often enterally via percutaneous endoscopic gastrostomy– PEG. This leads to the oral cavity being underutilized for chewing and food breakdown, yet often becoming inflamed due to various reasons. Primary concerns include possible self-inflicted oral or dental trauma, or residual trauma in cases where PVS is of traumatic origin, as well as bruxism resulting from spasticity and rigidity in patients with brainstem injuries (3).

Other significant factors include gastroesophageal reflux disease –GERD– and the absence of personal oral hygiene due to unconsciousness (4). Literature reports emphasize the contribution of oral health and education in preventing pneumonia, with studies indicating a notable modification in pneumonia mortality risks, especially in the elderly (5,6).

The maintenance of a nosocomial infection-free hospital environment for PVS patients necessitates diligent oral care (7). Complicating this care further is the administration of various medications to PVS patients, which can exacerbate oral health challenges. Commonly observed symptoms include xerostomia, bruxism, glossitis, dysgeusia, stomatitis, gingivitis, angioedema, sialadenitis, and edema, along with tongue pigmentation changes, oral lesions, motor tics, and

increased salivation (8). The contrasting positions on the importance of oral health among experts (9) in this field range from emphasizing hygiene to prevent pneumonia (10) to recognizing its potential role in enhancing cerebral activation in PVS patients.

Practicing Comprehensive Oral Care on patients in this state is indeed complicated, and specific protocols for these types of patients are difficult to find (11,12). These patients may receive considerable media attention, but often lack practical care. Drawing on principles used for patients with Traumatic Brain Injury –TBI– a customized protocol has been formulated and can be further personalized for these patient types (13). Artificial feeding in most patients results in fewer carious processes (14) but an increased buildup of tartar and calculus, gastroesophageal reflux, and a high risk of aspiration during dental chair interventions, particularly due to irrigation and head positioning (15).

The patient's bed should be positioned with the backrest at about 30° (16), ensuring minimal water use and employing new technologies, not just relying on an electric toothbrush, but also utilizing sonic toothbrushes, which are more effective. Certainly, the value of primary or secondary prevention in these patients is twofold: it firstly meets the medical need and secondly facilitates “remaining relationships” with the outside world (17), as highlighted in questionnaires and opinions of relatives and guardians of treated patients (18).

The implementation of such a protocol emphasizes the importance of individualized care, recognizing the unique challenges each PVS patient presents (19). In the realm of oral care, this approach is particularly beneficial, as the standard practices used for cognitively aware patients may not be suitable (20). For instance, the use of sonic toothbrushes not only provides efficiency in cleaning but also minimizes the physical discomfort that might be caused by traditional dental tools.

Further, the protocol suggests the necessity of integrating various healthcare professionals, including dentists, speech therapists, and nurses, to ensure a holistic approach to oral health. This multidisciplinary cooperation is crucial in addressing the complexities of oral care in PVS patients (21), especially considering the risks associated with dental procedures and the need for careful management of oral hygiene.

The potential aspiration risk during dental procedures in PVS patients cannot be overstated. Aspiration pneumonia remains a significant concern (22), necessitating careful planning and execution of dental treatments. Techniques like minimal water usage during dental procedures and strategic positioning of the patient are vital to mitigate this risk (23). Moreover, the use of advanced technologies, such as suction devices alongside sonic toothbrushes, ensures effective cleaning while minimizing the risk of aspiration.

In addition to the clinical aspects, the protocol acknowledges the psychosocial dimensions of oral health in PVS patients (24). The quality of oral care can have profound effects not only on the patient's physical health but also on their interaction with the outside world. Relatives and guardians often perceive improvements in oral health as an enhancement in the patient's quality of life (25), thereby reinforcing the importance of comprehensive oral care.

Conclusively, the development and implementation of a specialized oral care protocol for PVS patients mark a significant advancement in the field of specialized care. It underscores the necessity of a tailored approach, integrating various medical disciplines, to address the complex needs of these patients effectively. This protocol not only improves the oral health outcomes for PVS patients but also contributes to their overall well-being, furthering our understanding and capabilities in providing care for this unique patient population.

Conflict of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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