# Bleeding on probing during periodontal exam



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# <u>Discuss the significance of bleeding on probing during your periodontal</u> examination.

A thorough periodontal examination is an integral component of clinical examination. It encompasses periodontal diagnostic parameters such as probing depth (PD), clinical attachment level (CAL), bleeding on probing (BOP) and suppuration. For the purpose of this essay, the diagnostic value of BOP will be focused upon.

Before delving into this, it is only logical to briefly consider what periodontal disease is and appreciate the signs of healthy periodontium as differentiation of health from disease is vital in periodontal examination. Periodontal disease is an inflammatory disease affecting the supporting structures of teeth. The two main categories of periodontal diseases are gingivitis and periodontitis. Meanwhile, healthy periodontium is defined as having functional attachment level, lack recession with no interproximal bone loss and no signs of inflammation (AAP, 2001).

#### Significance of BOP

The aim of periodontal examination is to measure the extent of periodontal disease and assess the risk of future disease progression. Many clinical indices are devised using gingival bleeding upon mechanical trauma as a major component to aid periodontal examination. These indices are either dichotomous or have a gradation to them to assess the severity of BOP. Community Periodontal Index of Treatment Needs (CPITN) and Periodontal Screening and Recording Score (PSR) are two dichotomous bleeding indices which are commonly used to screen patients for periodontal disease. On the other hand, Papillary Bleeding Index (PBI), Bleeding Time Index (BTI), modified Sulcular Bleeding Index (mSBI) are indices where a grading of 0 to 5 is given to bleeding response. It is proposed that patients who present with no BOP as indicated by these indices, it is a plausible identification of periodontal stability. But the presence of higher scores was not predictive of active, progressive disease either.

The main question here is whether the absence of BOP is a reliable indicator of periodontal health. Lang and colleagues (1990) stated that absence of BOP is a reliable tool for prognostication of periodontal health as it was found to have a high negative predictive value of 98%. This is supported by more recent evidences that also pointed out the high specificity of BOP in indicating periodontal stability (Checchi, Montevecchi, Checchi, and Zappulla, 2009). However, while absence of BOP's indication of periodontal health is recognized, its role in predicting future attachment loss and progression of periodontal disease is not established. Badersten et al., (1990) determined that only 30% of sites which bled on probing actually accurately predicted progression of periodontal disease. But, BOP still serves as an excellent negative predictor of future attachment loss.

As BOP is an objective sign of connective tissue inflammation, the presence of BOP in patients is proposed to be indicative of gingivitis. BOP was observed to be an early presentation of gingivitis. It is usually seen clinically prior to other visual signs of gingival inflammation, colour and textural changes (Newman, Takei, Klokkevold, and Carranza, 2011). This is further supported by gingival biopsies which showed the correlation between BOP https://assignbuster.com/bleeding-on-probing-during-periodontal-exam/ and inflammatory cell infiltrate in gingival tissues. 74. 7% of connective tissue volumes of gingival biopsies in bleeding regions presented with signs of inflammation (Amato, Caton, Poison, and Espeland, 1986). This is significantly higher than what is seen in non-bleeding regions. But, the concept of what constitute normal or high inflammatory cell infiltrate is highly subjective and can be difficult to distinguish. Besides, the presence of BOP itself cannot be used as a diagnosis of periodontal disease, as it does not distinguish between different forms of periodontal diseases with gingival bleeding being associated multiple periodontal diseases including but not limited to gingivitis and acute necrotizing periodontitis.

All these have demonstrated the applicability of BOP in evaluating gingival health. But, BOP has also been reported to be effective in evaluating outcomes of periodontal treatment and to motivate patients in improving periodontal health. Periodontal therapy is targeted at reducing bacterial plaque, the main aetiology of periodontal disease to improve or restore periodontal health. BOP has been reported to have a high specificity to the presence of subgingival deposits, plaque and calculus. Its incidence increases as the amount of sub-gingival deposit rises (Checchi, Montevecchi, Checchi, and Zappulla, 2009). Moreover, it was further noted that many species of the red complex (Porphyromonas gingivalis, Tannerella forsythensisandTreponema denticola), which contributes to adult periodontal disease and orange complex were detected in dental plaque in BOP-positive sites (Dumitrescu, 2009). From these, it can be inferred that if there is continuation of BOP after therapy is performed, it indicates the presence of subgingival deposits and re-instrumentation should be preferentially

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administered at these sites. But, this is not solely done due to the persistent presence of subgingival deposits, but also because of the detrimental effect of repeated scaling and root planning in healthy sites (PD < 3mm) on the maintenance of functional attachment levels (Checci et al., 2009, Lang et al., 1986). BOP is a highly visual clinical signs which can also be a useful to motivate patients in improving oral hygiene. Additionally, the use of BOP has also been considered in the diagnosis of healthy peri-implant tissues which are important for aesthetics and long-term success of the implants. Casado et al., (2013) showed that BOP is present in inflamed mucosa, but will not always be absent in healthy mucosa. This is attributed to peri-implant anatomy that does not limit penetration of the probe beyond the barrier in the epithelial junction. But, absence of BOP represents a stable peri-implant condition. BOP itself is not a diagnostic factor of peri-implant disease, instead of BOP guiding the radiographic analysis.

#### Variables affecting BOP

Many factors can conceal or exacerbate BOP. One such factor is smoking. Smoking has a strong, dose-dependent suppressive effect on BOP due to its vasoconstrictive effect. This is particularly misleading as smokers are at a 2. 5 times greater risk of periodontitis compared to non-smokers with increased rate of progression of periodontal disease (Nair et al., 2003). Not only that, marked changes in the gingival is seen during pregnancy and while pregnancy is not the cause of gingivitis, it does aggravate pre-existing presence of gingivitis. Characteristic signs of pregnancy gingivitis are red, swollen gingival that bleeds easily (Laine, 2002). In patients with rheumatoid arthritis, increased BOP associated with high plasma levels of TNF-a may also be seen (Nilsson and Kopp 2008). Moreover, anti-coagulated patients on warfarin or heparin, where the normal haemostasis response is altered may sometimes also experience increased gingival bleeding. The same is seen in patients taking antiplatelet drugs or nonsteroidal anti-inflammatory drugs. Patients with defective platelet function such as von Willebrand's disease can have increased gingival bleeding. The use of excessive force when probing (> 0. 25N), continual probing of a site can result in false-positive readings. Various other factors such as angulation of probe, probe dimension or the probing location (marginal gingiva or bottom of the pocket) also affect gingival bleeding.

#### Management of patients with BOP

BOP alone, cannot be used to come to a diagnosis. So, development of a sound treatment plan to meet the need of the patient cannot be achieved. For an accurate diagnosis, BOP should be used in combination with other periodontal parameters, complete medical history, and radiographs.

However, as BOP is a sign of gingival inflammation and this is usually plaque induced, management of patients showing BOP, may include patient education to improve personal oral hygiene such as brushing techniques or flossing as it is futile for to carry out scaling and polishing if the patient is unable to maintain the required level of oral care at home to maintain periodontal health. The significance role of plaque in the inflammatory response needs to be highlighted to the patient. Dental practitioner should also point out areas where there are persistent presences of deposits to patients. Then, a comprehensive scaling and polishing should be provided, to completely remove of supragingival and subgingival deposits. This should be followed by post-treatment evaluation and subsequent regular review.

In conclusion, BOP is just a piece of puzzle in periodontal examination. Relying on BOP alone will not result in an accurate diagnosis and this is important as periodontal diseases have been associated with other systemic diseases including diabetes and coronary heart disease. The absence of BOP is a sign of periodontal but its presence is not indicative of disease progression. Therefore, dental practitioners need to have a thorough patient evaluation of all parameters in coming to a definitive diagnosis during periodontal examinations, and not just focus on the visible sign of bleeding.

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