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Gingival retraction

ATRAUMATIC SULCULAR OPENING

Enhancing your workflows through innovation

Favoring a non invasive technique of gingival eviction allowing realization of prosthesis according to gold standard rules

PREFACE

The epithelio-conjunctive attachment (otherwise called dento-gingival junction) is the most fragile part of the periodontium. It seems that it is at this location that everything begins and/or finishes. It needs to be approached with respect during the treatment and realization of the prothesis in order to avoid its destruction and/or irritation.

Today, various techniques exist to perform a sulcular opening. Nevertheless, in order to not damage the the conjunctional epithelium, the pressure of the technique/instrument used (probe, curette, roratry curettage…) should not exceed 2.5 N/mm² (which is equivalent to a strength of approximately 50 to 75 grams). However it is really easy to overtake this strength especially when local anesthesia is performed "to be untroubled".

ACTEON® Group was the first to propose to dental surgeons the EXPASYL™ system which allows a gingival retraction without breaking the epithelia-conjunctive attachment, thanks to 37 times less pressure than conventional cords.

With EXPASYL™, the emergence profile and the preparation limits become perfectly accessible and a high-precision impression can be taken, whether digitally or using traditional methods. The impressions thus obtained, will make it possible to make natural, aesthetic and perfectly adjusted prostheses.

"As periodontists we can thus congratulate ourselves to have the possibility to be non-iatrogenic and to avoid the regrettable loss of attachment with unsightly gingival recessions to follow." Jacques Charon, periodontist – Lille

Now there is EXPASYL™ EXACT, same formula than EXPASYL™, that provides the same results, the exact amount you need in a cost effective, single-patient capsule that can be used in ANY composite gun.

ACTEON® Group wishes to thank those who, during the last 20 years, worked on Expasyl™ and on the other techniques dedicated to open and dry the sulcus. Thus, they participated to improve the science and knowledge of the sulcus area allowing treatment of the patients to be more tolerated.

PRÉFACE

L'attache épithélio-conjonctive (aussi appelée jonction dento-gingivale) est la partie la plus fragile du parodonte. C'est apparemment là que tout commence et/ou tout finit. Elle nécessite d'être approchée avec respect pendant la réalisation des soins et des prothèses de telle sorte qu'elle ne soit pas rompue et/ou irritée.

Aujourd'hui il existe diverses techniques pour réaliser une ouverture sulculaire. Néanmoins, pour ne pas endommager l'attache épithéliale, la pression de la technique d'ouverture (cordonnets, curette, sonde...) ne doit pas être supérieure à 2,5 N/mm² (soit une force d'environ 50 à 75 grammes). Cependant, il est très facile de dépasser cette force surtout lorsqu'une anesthésie locale est réalisé "pour être tranquille".

Le Groupe ACTEON® a été le premier à proposer aux chirurgiens-dentistes le système EXPASYL™ qui permet une ouverture sulculaire idéale sans rupture de l'attache épithélio-conjonctive grâce à sa pression 37 fois moins forte que des cordonnets classiques.

Avec EXPASYL™, le profil d'émergence et la limite cervicale deviennent parfaitement accessibles pour une prise d'empreinte précise, que ce soit en numérique ou avec des méthodes traditionnelles. Les empreintes ainsi obtenues permettront de réaliser des prothèses naturelles, esthétiques et parfaitement ajustées.

"En tant que parodontistes, nous ne pouvons donc que nous féliciter d'avoir ainsi la possibilité de ne pas être iatrogènes et d'éviter les regrettables pertes d'attache et les disgracieuses récessions gingivales qui s'en suivent." Jacques Charon, Parodontiste – Lille

Aujourd'hui, ACTEON® innove et met à disposition des dentistes EXPASYL™ EXACT, c'est la même formule qu'EXPASYL™, mais avec un nouveau conditionnement adapté à vos besoins : la quantité exacte dont vous avez besoin dans une capsule économique mono-patient qui peut être utilisée dans n'importe quel pistolet applicateur pour composites.

Le Groupe ACTEON® remercie celles et ceux qui, au cours des 20 dernières années, se sont penchés sur Expasyl™ et sur les autres techniques d'ouverture et d'assèchement du sulcus et ont permis également le développement d'Expasyl™ Exact. Ils ont ainsi participé à améliorer l'état de la science et la connaissance de la zone sulculaire pour une prise en charge des patients toujours plus efficace et mieux tolérée.

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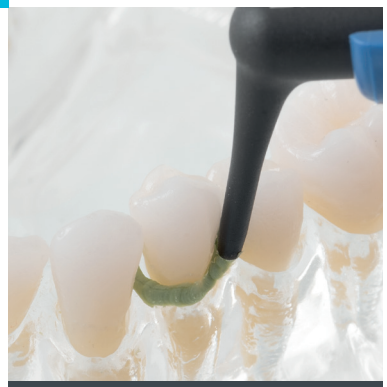

Correlation of generated pressure, efficacy and good tolerance

Corrélation entre pression générée, efficacité et bonne tolérance

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Comparison of gingival retraction materials using a new gingival sulcus model

Marco Dederichs, DMD , Mina D. Fahmy, BSc, DDS , Harald Kuepper, DMD, PhD, &Arndt Guentsch, DMD, PhD, MHBA

Journal of Prosthodontics (2019) by the American College of Prosthodontists

Abstract

Statement of problem:
Use of cords can lead to periodontal damage; healing time up to 1 week in case of destruction of epithelium.

Aim:
To investigate the pressure generated by different retraction materials using a novel gingival sulcus model.

Materials and methods:
A gingival sulcus model was made using a polymer frame filled with silicon. A pressure sensor and a sulcus-fluid simulation were embedded into the silicon chamber to evaluate the pressure generated by different retraction materials.

Six sizes of Ultrapak retraction cords (Ultradent, sizes #000 - 3), 4 retraction pastes (Expazen, Expasyl, Acteon, Access Edge, Traxodent) and 2 retraction gels (Sulcus Blue, Racegel) were analyzed. The mean and median pressure, interquartile range, and standard deviation (SD) of n = 10 repeated measurements were calculated. Statistical analysis was conducted by Kruskal-Wallis test for differences between the main groups of retraction materials, and Mann-Whitney U-test was performed to analyze differences between the single retraction materials.

Results:
Pressure (mean ± SD) generated by retraction cords increased with increasing size (48.26 ± 11.29 kPa, size #000 to 149.27 ± 28.75 kPa for #3). There was a significant difference between sizes ($p < 0.01$), except in #0 versus #1, and #2 versus #3. Retraction pastes generated pressures that ranged from 82.74 ± 29.29 kPa (Traxodent) to 524.35 ± 113.88 kPa (Expasyl). Retraction gels generated pressures

from 38.96 ± 14.68 kPa (Racegel) to 95.15 ± 24.18 kPa (Sulcus Blue). Pressure generated by Expasyl was significantly higher than pressure generated by all other tested materials ($p < 0.001$).

Conclusion:
Gingival displacement paste showed better response in achieving horizontal displacement of the gingival sulcus than gingival retraction cord.

Clinical significance:
Pressure generated by retraction pastes and gels depends on the consistency of the retraction material, while pressure generated by retraction cords increased with increasing size of cords. Expasyl was found to generate the highest pressure compared to all other retraction materials.

"The highest mean pressure was found in Expasyl compared to all other retraction materials. The pressure generated by Expasyl was significantly higher in comparison to the other groups ($p < 0.001$)."

“Packing retraction cords can lead to periodontal damage; this destruction of epithelium can take one week to heal damage.”

"Mean pressures ± SD generated by retraction pastes ranged from 82.74 ± 29.29 kPa (Traxodent) to 524.35 ± 113.88 kPa (Expasyl)."

"Recent systematic review on the efficiency of cordless versus cord techniques for gingival retraction by Huang et al concluded that retraction pastes are less traumatic to soft tissues compared to retraction cords."

"Retraction pastes are described to be easier to apply, and due to gingival displacement and astringent and hemostatic effects of most retraction pastes it may be more efficient while enhancing patient comfort."

"Studies revealed a higher amount of gingival retraction when using Expasyl instead of Ultrapak cords."

"La pression moyenne la plus élevée, en comparaison avec toutes les autres méthodes de rétraction, a été enregistrée par Expasyl. La pression générée par l'Expasyl était significativement plus élevée en comparaison avec les autres groupes ($p < 0,001$)."

"Comprimer des cordonnets de rétraction peut engendrer des lésions parodontales ; cette destruction de l'épithélium peut prendre jusqu'à une semaine à cicatriser."

"La moyenne des pressions générées par les pâtes de rétraction varie entre 82.74 ± 29.29 kPa (Traxodent) et 524.35 ± 113.88 kPa (Expasyl)."

"Une étude récente sur l'efficacité des techniques des rétractions gingivales sans cordonnets versus avec cordonnets par Huang et al, a conclu que les pâtes de rétraction sont plus atraumatiques pour les tissus mous que les cordonnets."

"Les pâtes de rétraction sont décrites comme étant plus simple à appliquer, et en raison du déplacement gingival et des effets astringents et hémostatiques de la plupart des pâtes de rétraction, elles peuvent être plus efficaces tout en améliorant le confort du patient."

"Des études ont révélé une rétraction gingivale plus importante lors de l'utilisation d'Expasyl au lieu des cordonnets Ultrapak."

Correlation of pressure and displacement during gingival displacement: an in vitro study*

Bennani V, Aarts JM, Schumayer D.
University of Otago, Dunedin, New Zealand.
Journal of Prosthetic Dentistry, 2015 Nov 5. pii: S0022-3913(15)00456-4

Abstract

Statement of problem:
Although numerous gingival displacement materials are available, information is limited regarding the pressures that can atraumatically produce sufficient gingival displacement for a successful impression.

Purpose:
The purpose of this in vitro study was to measure pressure and the resulting movement of artificial gingiva during simulated gingival displacement.

Materials and methods:
An idealized tooth model was made from acrylic resin and polyvinyl siloxane to simulate the free gingiva, sulcus, and attachment. The pressure and displacement achieved by 3 materials (Expasyl, Expasyl New, and KnitTrax Cord) were measured. A stereoscopic digital measuring microscope was used to quantify the space generated by the displacement material. A pressure gauge was used to measure the corresponding pressures.

Results:
The injection of Expasyl resulted in a displacement distance of 1.31 mm, Expasyl New 1.07 mm, and KnitTrax Cord 0.85 mm, which are within acceptable clinical parameters. The correlation between pressure and gap showed that Expasyl and Expasyl New behaved similarly, while KnitTrax Cord was different. Expasyl, Expasyl New, and KnitTrax Cord all had maximum pressures that would be considered atraumatic to the epithelial attachment.

Conclusion:
An increase in pressure resulted in an increase in displacement for the 2 paste materials. However, contrary to expectation, displacement decreased as pressure increased for the cord material.

In this trial, Expasyl generates 1.31 mm of movement, and KnitTrax Cord generates 0.85 mm of movement, which meets clinical requirements.

With Expasyl, increased pressure causes greater movement, while the cord surprisingly produces the opposite effect: the greater the pressure, the lesser the movement.

This is explained as follows:

- The retraction paste delivers a constant pressure.
- Because the cord is porous, the pressure from the instrument being used for the placement drives out the air it contains. Its diameter then decreases, along with its action capacity. As a result, there needs to be a minimal pressure exerted on the cord for optimal spacing.

The article points out that, with retraction pastes, increased generated pressure results in a higher performing sulcular opening.

Dans cet essai, Expasyl génère un déplacement de 1,31 mm et KnitTrax Cord de 0,85 mm, ce qui répond aux impératifs cliniques.

Avec Expasyl une augmentation de pression induit un déplacement plus important alors que le cordonnet, étonnamment, produit l'inverse : plus de pression génère moins d'écartement.

Ceci s'explique de la façon suivante :

- *La pâte de rétraction délivre une pression constante,*
- *Le cordonnet étant poreux, la pression de l'instrument utilisé pour le mettre en place chasse l'air qu'il contient. Son diamètre diminue alors et sa capacité d'action avec. En résulte donc la nécessité d'exercer sur le cordonnet une pression minimale pour un écartement optimal.*

L'article souligne qu'avec les pâtes de rétraction, une augmentation de la pression générée se traduit par une ouverture sulculaire plus performante.

Comparison of pressure generated by cordless gingival displacement materials

Bennani V, Inger M, Aarts JM
Faculty of Dentistry, University of Otago, New Zealand.
Journal of Prosthetic Dentistry, 2014 Aug;112(2):163-7

Abstract

Statement of problem:
Because pressure generated by a displacement cord may traumatize the gingiva, cordless gingival displacement materials are available to the clinician as atraumatic alternatives. However, whether the pressures produced by the different systems are equivalent is unclear.

Purpose:
The purpose of this study was to investigate the pressures generated by 4 different cordless gingival displacement materials.

Materials and methods:
A chamber with a dimension of 5 × 5 × 2 mm was made from Type IV stone and silicone material to simulate a rigid and elastic environment. A pressure gauge was embedded into the wall of the chamber, and 4 materials (Expasyl, Expasyl New, 3M ESPE Astringent Retraction Paste, and Magic FoamCord) were injected into the chamber. The maximum and postinjection pressures were recorded with Chart 5 software and the Power Lab system. The pressures generated by the different materials were compared with a post hoc Mann-Whitney U test (α=.05).

Results:
The median postinjection pressures generated by Expasyl (142.2 kPa) and Expasyl New (127.6 kPa) were significantly greater than the pressures generated by 3M ESPE Astringent Retraction Paste (58.8 kPa) and Magic Foam Cord (32.8 kPa). Expasyl generated a maximum pressure of 317.4 kPa and Expasyl New of 296.6 kPa during injection, whereas 3M ESPE Astringent Retraction Paste generated 111.0 kPa, and Magic Foam Cord generated 17.8 kPa.

Conclusion:
All cordless systems produced atraumatic pressures, with Expasyl New and Expasyl generating the highest pressures and, therefore, can be considered the most effective material.

The pressure generated during a gingival retraction differs from one material to another:

During placement, the average pressure recorded for Expasyl (181.5 kPa) is nearly three times greater than the recorded pressure for the 3M ESPE paste (63.6 kPa) and 20 times greater than Magic FoamCord (9.0 kPa).

Expasyl thus generates the greatest pressure and can therefore be considered the most effective material.

The article further states that:

- The placement of the cord generates more than 5,000 kPa of pressure.
- The integrity of the epithelial attachment is maintained at up to 2,400 kPa of pressure.
- The maximum pressure recorded during the application of Expasyl is 317.4 kPa.

La pression générée lors d'une rétraction gingivale diffère d'un matériau à l'autre :

Lors de la mise en place, la pression moyenne enregistrée pour Expasyl (181,5 kPa) est près de 3 fois supérieure à celle enregistrée pour la pâte de 3M Espe (63,6 kPa) et 20 fois supérieure à celle de Magic FoamCord (9,0 kPa).

Ainsi Expasyl génère la plus forte pression et peut donc être considéré comme le matériau le plus efficace.

L'article précise par ailleurs que :

- *le placement du cordonnet génère une pression supérieure à 5 000 kPa*
- *le niveau de pression respectant l'intégrité de l'attache épithéliale est de 2 400 kPa*
- *la pression maximale enregistrée lors de l'application d'Expasyl est 317,4 kPa.*

Evaluation of efficacy of different gingival displacement materials on gingival sulcus width

Prasanna GS, Reddy K, Kumar RK, Shivaprakash S.
Department of Prosthodontics, Sri Hasanamba Dental College and Hospital, Hassan, Karnataka, India
The Journal of Contemporary Dental Practice, 2013 March; 1;14(2):217-21

Abstract

Aim:
The purpose of the present in vivo study was to measure the efficacy of different gingival displacement materials in achieving gingival tissue displacement and to compare the efficacy of Expasyl displacement paste (Pierre Rolland, France) and gingival displacement cord for gingival displacement.

Materials and methods:
Sixteen subjects were included in the study. Premolars were prepared to receive full veneer crown, gingival displacement was carried using gingival retraction cord and gingival displacement paste. Impression of the gingival sulcus was made. Sulcus width after displacement was measured under magnification.

Results:
The mean displacement value of sulcus width was 0.21 ± 0.01 mm for the gingival retraction cord and 0.26 ± 0.02 mm for the gingival displacement paste. 'F' test was used for statistical analysis. Difference among the two test agents was statistically significant ($p < 0.01$).

Conclusion:
Gingival displacement paste showed better response in achieving horizontal displacement of the gingival sulcus than gingival retraction cord.

Clinical significance:
Gingival displacement helps in recording the unprepared tooth surface adjacent to the finish line in the impression being made, thereby helping a better marginal adaptation and emergence profile in the extracoronal restoration.

Randomized crossover study on 16 patients (32 evaluated premolars) comparing the gingival retraction obtained with Expasyl versus the cord (impregnated with 15.5% iron sulphate).

The findings of the trial show that the paste generates a better response with a horizontal spacing of the gum tissue that is greater than what is obtained with the cord: 0.26 ± 0.02 mm VS 0.21 ± 0.01 mm. The observed difference is statistically significant. It produces a better record of the portion of unprepared tooth beyond the finishing line and a better adjustment of the prosthesis at the edge, in the extension of the emergence profile.

Studies further show that the retraction cord must be applied for about 10 minutes to obtain proper tissue spacing with minimal trauma. When affixed beyond 10 minutes, the cord may damage the sulcular epithelium. In this trial, after 10 minutes of contact, it became aggressive to the sulcular epithelium, the junctional epithelium, and the conjunctive tissue. Eight days of healing was required.

Etude croisée randomisée portant sur 16 patients (32 prémolaires évaluées) et comparant la rétraction gingivale obtenue avec Expasyl versus le cordonnet (imprégné de sulfate ferrique 15,5%).

Les conclusions de l'essai font apparaître que la pâte génère une meilleure réponse avec un écartement horizontal de la gencive supérieur à celui obtenu avec le cordonnet : 0,26 ± 0,02 mm VS 0,21 ± 0,01 mm. La différence observée est statistiquement significative. Elle contribue à mieux enregistrer la portion de dent non préparée au-delà de la ligne de finition et à un meilleur ajustement de la prothèse au niveau marginal, dans le prolongement du profil d'émergence.

Des études montrent par ailleurs que le cordonnet rétracteur doit être appliqué pendant environ 10 minutes pour obtenir le bon écartement des tissus avec un trauma minima. Le cordonnet, lorsqu'il est apposé au-delà de 10 minutes risque d'endommager l'épithélium sulculaire. Dans cet essai, après un contact de 10 minutes, il a occasionné une agression de l'épithélium sulculaire, de l'épithélium de jonction et du tissu conjonctif. La cicatrisation a nécessité 8 jours.

A comparison of pressure generated by cordless gingival displacement techniques

Vincent Bennani, John M. Aarts, Li Hong He.
Department of Oral Rehabilitation, Faculty of Dentistry, University of Otago, Dunedin, New Zealand.
The Journal of Prosthetic Dentistry, 2012 June;107(6):388-392

Abstract

Statement of problem:
Handling properties of cordless gingival displacement materials is not well understood, resulting in incorrect use. Insufficient displacement of the gingival margin may result in a poor impression.

Purpose:
This study investigated the pressure generated by a cordless displacement paste with respect to different techniques.

Materials and methods:
Two chambers with dimensions of 5 × 5 × 2 mm were made from Type IV stone and silicone material to simulate a rigid and elastic environment. A pressure gage was embedded into the wall of the chamber, and a paste material (Expasyl) was injected into the different chambers. The final pressures generated by the Expasyl were recorded by Chart 5 software and Power Lab system. This was repeated by using a displacement cord (KnitTrax) as a control for the study. The different loading methods for the Expasyl material were compared with 1-way ANOVA (α =.05).

Results:
The mean pressure generated during placement of the Expasyl paste material in the silicone chamber was 143 kPa, which is significantly lower (P=.001) than the pressure generated by the KnitTrax cord (5396 kPa). Manipulating Expasyl after placement resulted in a pressure reduction of 73% in the stone chamber and 29% in the silicone chamber.

Conclusion:
Pressure generated by Expasyl is minimal compared to the cord system. Pressure is generated during the injection of the Expasyl, and subsequent manipulation reduced the final pressure. Handheld and motorized delivery guns produce similar pressure, but the motorized gun was found to have a more constant pressure delivery.

These are essential factors in the survival of fixed restorations:
• atraumatic displacement of the gingival tissue,
• healthy periodontium.

To obtain ideal gingival retraction, 2 factors should be considered:
• a minimum of 0.2 mm exposure of the sulcus,
• an atraumatic pressure to the gingival epithelium attachment.

Periodontal probings only develop their pressure on a reduced part of the gingival epithelium attachment.

The comparison of the pressure generated by cordless displacement technique with respect to cord technique leads to the following results:
• 143 kPa during Expasyl placement and 141 kPa after Expasyl placement
• 5 396 kPa during cord placement and 1 776 kPa after cord placement

Thus Expasyl generates 37.7 times less pressure than cord technique and protects the epithelial attachment.

Finally any manipulation of the product after placement (with the help of spatula, cotton, thumb etc...) reduces its viscosity (the molecular structure of the paste collapses when a pressure is applied) and then its efficacy (-29%).

La réussite et la longévité d'une restauration sont conditionnées par :
• une ouverture sulculaire atraumatique,
• le parfait état du parodonte.

Les conditions d'une ouverture sulculaire idéale sont :
• ouverture minimum de 0,2 mm,
• pression la plus atraumatique possible.

Les sondes parodontales n'exercent leur pression que sur une surface extrêmement réduite de l'attache épithéliale.

La comparaison de la pression exercée par un cordonnet et par Expasyl fait apparaître les résultats suivants :
• 143 kPa pendant l'application d'Expasyl et 141 kPa quand Expasyl est en place
• 5 396 kPa pendant l'application du cordonnet et 1 776 kPa quand le cordonnet est en place

L'application d'Expasyl génère ainsi 37,7 fois moins de pression que le cordonnet et préserve l'attache épithéliale.

Enfin toute manipulation du produit après sa mise en place (spatule, coton, pouce etc ...) en réduit la viscosité (la structure moléculaire de la pâte s'écrase quand elle est soumise à une pression) et donc l'efficacité (-29 %).

2.

Gingival retraction and periodontal lesion. differences observed between techniques.

Rétraction gingivale et lésion parodontale. différences observées entre les techniques.

Gingival retraction pastes versus gingival retraction cord for fixed prosthodontics: a systematic review 20

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Clinical case / Cas clinique: Dr Erwan BOULIC - France

Gingival retraction pastes versus gingival retraction cord for fixed prosthodontics: a systematic review

HONG Le- guan, GUO Li-ping, XUE Li-li

Shanghai Kou Qiang Yi Xue. 2013 Aug ;22(4):456-61

Abstract

Statement of problem:
The strength of the evaluation of this systematic review may be affected by the following factors:

1) Moderate bias risk existed for each study included, affecting the credibility of the conclusion.

2) Clinical difference between the studies cannot be completely eliminated.

3) Although important domestic databases were searched and a manual search was performed, it is not guaranteed that all RCTs were found because the databases searched do not cover all Chinese medical journals.

Aim:
To assess the efficacy of gingival retraction paste versus gingival retraction cord in fixed prosthodontics on gingiva protection, tooth preparation, clarity of the impression and plaster model, and aptness of the prosthesis.

Materials and methods:
Chinese BioMedical Literature Database, VIP, China National Knowledge Infrastructure (CNKI) and Wanfang database were searched on November 15th, 2012 for eligible studies. Hand-searching included references of the included studies and Chinese dental journals. Risk of bias of the included studies was assessed by 2 reviewers independently using Cochrane Collaboration's tool, and data extraction was done by the 2 reviewers. Meta-analysis was performed with Revman 5.1 software.

Results:
Nine randomized controlled trials, involving 1153 participants, were included. All of them had moderate risk of bias. Meta-analysis revealed that gingival retraction paste had better effect on gingival health [RR=1.05, 95% CI (1.00, 1.11), P=0.04], tooth preparation [RR=1.17, 95% CI (1.07, 1.28), P=0.0008] and clarity of the impression and plaster model [RR=1.08, 95% CI (1.03, 1.13), P=0.0009] than gingival retraction cord, and the aptness of the prosthesis was as good as the cord [RR=1.07, 95% CI (0.96, 1.19), P=0.21].

Conclusion:
The gingival retraction paste has better effect on gingival health, tooth preparation and clarity of the impression and plaster model, while the aptness of the prosthesis is as good as the cord and can be considered as a good candidate of the gingival retraction cord, but more randomized controlled trials are needed.

"The results of the meta-analysis showed that the use of retraction paste could significantly reduce damage to the gingiva around the abutment [RR=1.05, 95% CI (1.00, 1.11), P=0.04]."

"The use of gingival retraction paste significantly improved the satisfaction of the dentists [RR=1.17, 95% CI(1.07, 1.28), P = 0.00081]."

"Meta-analysis showed that in the 1063 patients included, gingival retraction paste showed significantly improved clarity of impression and model."

"It was suggested that gingiva retraction paste can be used as a better alternative to gingiva retraction cord."

"It [Expasyl] not only provides good mechanical retraction, but also a hemostatic effect. Its damage to gingiva is minor."

"Les résultats de la méta-analyse ont montré que l'utilisation de la pâte de rétraction pouvait réduire de manière significative les dégâts causés à la gencive et son ancrage [RR=1,05, 95% CI (1,00, 1,11), P=0,04]."

"L'utilisation de la pâte de rétraction gingivale a amélioré de manière significative la satisfaction des dentistes [RR=1,17, 95% CI (1,07, 1,28), P = 0,00081]."

"La méta-analyse a montré que chez les 1063 patients inclus, la pâte de rétraction gingivale a montré une empreinte et un modèle significativement plus clairs."

"Il a été suggéré que la pâte de rétraction des gencives peut être utilisée comme une meilleure alternative aux cordonnets rétracteurs."

"Il [Expasyl] permet non seulement une bonne rétraction mécanique, mais aussi un effet hémostatique. Ses dégâts sur la gencive sont moindres."

Effect of retraction materials on gingival health: a histopathological study

Phatale S, Marawar PP, Byakod G, Lagdive SB, Kalburge JV.
Department of Periodontics and Oral Implantology, Pravara Institute of Medical Sciences, Rural Dental College, Ahmednagar, Maharashtra, India
Journal of Indian Society of Periodontology, 2010 Jan;14(1):35-9

Abstract

Background:
Gingival retraction methods are used in dentistry for impressions of subgingival crown margins, such as, mechanical, chemical, chemicomechanical, and surgical. These methods may injure the gingival sulcular epithelium. Hence, the present study is carried out to evaluate the effect of different retraction materials, such as, Expasyl, Magic Foam Cord, and impregnated retraction cord on the gingival sulcular epithelium.

Materials and methods:
This study included 30 cases of bilateral premolar extraction patients with Loe and Silness gingival index zero. Retraction materials were kept in the dry, isolated labial gingival sulcus for the required time. The retraction materials were removed by rinsing with water. Retracted gingiva of 2 - 3 mm from the gingival margin along with the tooth was extracted and the decalcified sections were microscopically studied.

Data analysis:
Data were analyzed by applying the chi-square test.

Results:
This study showed better results with retraction paste as compared to the retraction cord, and there was a significant association between retraction materials and the relative degree of injury to the sulcular epithelium.

Conclusion:
There is a significant association between retraction materials and gingival sulcular epithelium. It can be stated that impregnated retraction cord, may be used commonly but it needs proper tissue manipulation and is technique sensitive. Newly advanced material in the form of retraction paste like Expasyl or Magic Foam Cord was found to be better than cord as assessed histologically, it respects periodontium.

The gingival retraction procedure may violate the biological space and thus lead to bone damage and gum recession. However, the periodontal aggression is clinically undetectable, with the exception of severe trauma. Tissue retraction is therefore generally perceived by practitioners as atraumatic.

The study by Van der Velden & De Vries showed that the epithelial attachment supports up to 1 N/mm² and breaks at 2.5 N/mm². Remember, the cord technique involves pressure of about 2.5 N/mm².

Studies on retraction cords have reported varying degrees of necrosis and/or de-epithelialization introduced in the sulcular region. About eight days is required for healing.

As for electrosurgery, it bears a considerable risk of irreversible periodontal damage.

In this trial involving 30 cases, minor injuries were reported using Expasyl, Magic FoamCord, and the cord impregnated with a rate of 6.67, 20.00, and 36.67%, respectively. In more than 20% of cases in which retraction was observed with the impregnated cord, moderate injuries were observed.

The discussion in this article states that Expasyl paste is noninvasive, easy to use, painless, reliable, haemostatic, effective, safe, comfortable for the patient, and saves time.

La procédure de rétraction gingivale peut induire violation de l'espace biologique et de ce fait perte osseuse et récession gingivale. Pour autant l'agression du parodonte est indétectable cliniquement, à l'exception des traumatismes sévères. La rétraction des tissus est donc généralement perçue comme atraumatique par les praticiens.

L'étude de Van der Velden & De Vries a montré que l'attache épithéliale supporte jusqu'à 1 N/mm² et rompt à partir de 2,5 N/mm². Pour mémoire la technique du cordonnet implique une pression d'environ 2,5 N/mm².

Des études portant sur les cordonnets rétracteurs ont fait état de différents degrés de nécrose et/ou de désépithélialisation induits au niveau de la zone sulculaire. 8 jours environ sont nécessaires pour la cicatrisation.

L'électrochirurgie, quant à elle, génère un risque considérable de dommage parodontal irréversible.

Dans cet essai portant sur 30 cas, de légères lésions ont été relevées sous Expasyl, Magic FoamCord et le cordonnet imprégné avec un taux de respectivement 6,67, 20,00 et 36,67 %. De plus dans 20% des cas où la rétraction a été obtenue avec le cordonnet imprégné, des lésions modérées ont été observées.

La discussion dans cet article stipule que la pâte Expasyl est non invasive, simple d'utilisation, indolore, fiable, hémostatique, efficace, sûre, confortable pour le patient et économique en temps.

New Zealand dentists' use of gingival retraction techniques for fixed prosthodontics and implants

Azza Al-Ani. Auckland District Health Board, Greenlane Clinical Centre, Auckland, New Zealand.
Vincent Bennani, Nicholas P. Chandler, Karl M. Lyons, W. Murray Thomson. School of Dentistry, University of Otago Dunedin, New Zealand.
New Zealand Dental Journal, 2010 Sep;106(3):92-96

Abstract

Objective:
To identify the techniques most commonly used in New Zealand for gingival retraction for impressions of natural teeth and implants in fixed prosthodontics.

Design:
Postal survey of a random sample of dentists.

Methods:
A questionnaire was mailed to all members of the New Zealand Dental Association (NZDA). Data were analysed using SPSS.

Results:
The response rate was 51%. Veneer, crown and bridge treatments were routinely carried out by 89% of respondents, while implant treatment and/or implant-supported prostheses were provided by 65%. Around natural teeth, gingival retraction was mainly achieved with surgery (including electrosurgery, laser and rotary curettage) and/ or cord, by 82% of dentists. Cord with chemicals was used by 63% and plain cord by 37%. Gingival retraction around implants was used by 18%. Among the latter, the most popular gingival retraction method for use around implants was plain cord (used by 31%), while 25% used cord with chemicals. Another 23% reported using surgery as their means of gingival retraction around implants, while 19% reported using Expasyl (Pierre-Roland), and 2% reported using Magic Foam Cord (Dentsply), both of which are injectable matrices for gingival retraction.

Conclusion:
Dentists in New Zealand undertake a considerable amount of fixed prosthodontic and implant work. Gingival retraction around natural teeth is used commonly, while only a small number of participants report using it for implants. A surprising finding was the relatively high number of participants who reported using surgery for gingival retraction around natural teeth.

The sulcular opening has to be approximately 0.2 millimeter at the level of the finish line (impressions with less width induce higher incidences of tearing, voids and less accuracy).

Accessibility to cervical limits without damaging the gingival tissues is essential.

- Cord causes acute injury as laceration and irreversible trauma to the attachment. The risks are recession, loss of attachment and bone. Moreover if the sulcus is lacerated, the chemical agents included in the cord penetrate into deep cell layers. This may induce delayed healing, bone loss and peri-implantitis.
- Surgical procedures are rapid and haemostatic, but destructive and tissue excising. Besides the regeneration of the peri-implant mucosa is not as good as the periodontal one. Thus around implants they are inadvisable as they reduce the long-term success of the implant project.
- An injectable matrix provides an atraumatic option: no laceration, no damage to the epithelial attachment, no inflammation, no bleeding during or after retraction, no pain and thus no anaesthesia or haemostasis to add.

About occasional bleeding reported after retraction (795 dentists have replied):

- around natural teeth, Expasyl showed the most improvement (with only 15%) compared to Magic Foam Cord (24%), chemicals with cord (40%), plain cord (55%).
- around implants, Expasyl was also reported to be substantially different with only 6% while the comparators are respectively at 20%, 22% and 26%.

L'ouverture sulculaire - avant prise d'empreinte - doit être d'environ 0,2 millimètre au niveau de la ligne de finition (les empreintes réalisées avec une ouverture inférieure génèrent davantage de tirages, des manques et une précision moindre).

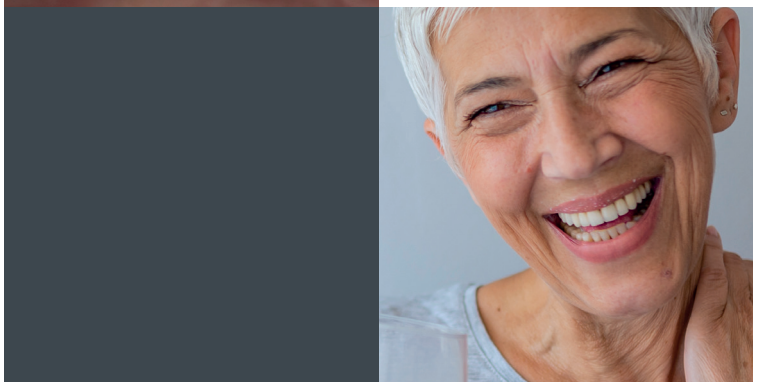
Il est essentiel d'accéder aux limites cervicales sans léser les tissus gingivaux.

- *Les cordonnets rétracteurs sont à l'origine de sévères blessures telles que lacération et traumatisme irréversible de l'attache. Les risques qui en découlent sont : récession, perte d'attache et résorption osseuse. De plus lorsque le sulcus est lacéré, les agents chimiques imprégnant le cordonnet pénètrent profondément dans les tissus gingivaux, ce qui peut retarder la cicatrisation et induire perte osseuse et péri-implantite.*
- *Les procédures chirurgicales sont rapides et hémostatiques, mais destructrices et à l'origine de perte tissulaire. Par ailleurs, la régénération de la muqueuse péri-implantaire n'est pas aussi performante que celle des tissus péridentaires. Ainsi, la chirurgie à des fins d'ouverture sulculaire sur implants est inopportune puisqu'elle réduit le succès à long terme du projet implantaire.*
- *Une matrice injectable offre une option atraumatique : absence de lacération, d'endommagement de l'attache épithéliale, d'inflammation, de saignement pendant ou après la déflexion, et de douleur. Il est ainsi inutile d'adjoindre une anesthésie ou un hémostatique.*

Au sujet des saignements occasionnels relevés après la déflexion (étude portant sur 795 dentistes ayant renseigné un questionnaire) :

- *Expasyl - appliqué au niveau péridentaire - affiche les meilleurs résultats (avec seulement 15 % des répondants déclarant des saignements occasionnels) contre Magic Foam Cord (24 %), les cordonnets imprégnés (40 %), les cordonnets simples (55 %).*
- *Expasyl - appliqué au niveau péri-implantaire - apparaît également comme substantiellement différent avec seulement 6 % des répondants déclarant des saignements occasionnels contre respectivement 20 %, 22 % et 26 % pour ses comparateurs.*

3.



Fragility of peri-implant tissues. ulceration and delayed healing are possible due to cord.

Fragilité des tissus péri-implantaires. possibles ulcérations et retard de cicatrisation dus au cordonnet.

Effect of a cordless retraction paste material on implant surfaces: an in vitro study 28

Gingival retraction techniques for implants versus teeth: current status 30

Clinical case / Cas clinique: Dr. Ingo Baresel - Germany / Allemagne

Effect of a cordless retraction paste material on implant surfaces: an in vitro study

Yin-Szu Chang, Vincent Bennani, Andrew Tawse-Smith, Liz Girvan.
School of Dentistry, University of Otago, Dunedin, New Zealand.
Brazilian Oral Research, 2011 Nov-Dec;25(6):492-499

Abstract

Cordless retraction paste material for gingival retraction in implant dentistry has recently become of interest to the clinician. However, few studies have been conducted on the use of retraction pastes and their possible interaction with implant surfaces. This in vitro study evaluated the effect of a cordless retraction paste material, Expasyl® (Acteon), on TiUnite® (Nobel Biocare) implant surfaces. Three areas of the fixtures were evaluated before and after contact with the retraction paste using scanning electron microscopy to evaluate changes in surface topography and energy-dispersive spectroscopy to identify any surface chemistry modifications. Alteration of the initial surface after exposure to Expasyl® was identified, with the implant collar showing the most changes.

Tissues around implants are more fragile than around natural teeth.

Because it is an atraumatic procedure, a cordless deflection paste gives an implantology interest.

Further researches are necessary for delivering a definitive conclusion about the biocompatibility of the surface implant after contact with Expasyl.

Les tissus péri-implantaires sont plus fragiles que les tissus péridentaires.

Parce qu'il s'agit d'une procédure atraumatique, une pâte de déflexion sans fil présente un intérêt en implantologie.

Des recherches complémentaires sont nécessaires afin d'approfondir les conclusions relatives à la biocompatibilité de la surface de l'implant après contact avec Expasyl.

Fragility of peri-implant tissues. ulceration and delayed healing are possible due to cord.

Fragilité des tissus péri-implantaires. Possibles ulcérations et retard de cicatrisation dus au cordonnet.

Gingival retraction techniques for implants versus teeth: current status

Vincent Bennani, Donald Schwass, Nicholas Chandler.
Department of Oral Rehabilitation, School of Dentistry, University of Otago, Dunedin, New Zealand.
Journal of the American Dental Association 2008 October;(139)10:1354-1363

Abstract

Background:
The authors reviewed and compared gingival retraction techniques used for implants and teeth.

Types of studies reviewed:
The authors searched the literature using article databases Ovid MEDLINE up to May 2008, PubMED and Google Scholar (advanced search) and the following search terms: gingival retraction, implant abutment, impressions, cement-retained implant restoration, impression coping, peri-implant tissue, emergence profile and tissue conditioning.

Results:
The authors found insufficient evidence relating to gingival displacement techniques for impression making for implant dentistry. Gingival retraction techniques and materials are designed primarily for peridental applications; the authors considered their relevance to peri-implant applications and determined that further research and new product development are needed.

Clinical implications:
The use of injectable materials that form an expanding matrix to provide gingival retraction offers effective exposure of preparation finish lines and is suitable for conventional impression-making methods or computer-aided design/computer-aided manufacturing digital impressions in many situations. There are, however, limitations with any retraction technique, including injectable matrices, for situations in which clinicians place deep implants.

Peridental and peri-implant tissues are substantially different.

It induces that peridental ones have a lesser robustness: the junctional system is less adherent, more permeable and its regenerative capacity is lower.

A kaolin matrix with aluminum chloride:
- allows an atraumatic retraction (no risk of laceration; less risk of inflammation etc),
- opens & dries the sulcus avoiding the artifacts - and thus errors - due to retraction cords fibers remaining in the sulcus.

For impression with polyvinylsiloxane, a 0.2 millimeter thickness of material in the sulcus is enough to ensure a good accuracy. Larger sulcular opening is necessary for CAD/CAM impressions.

Cords used around implant may induce ulceration & delayed healing. Moreover, to get a 0.2 millimeter sulcular opening the retraction cord must be left in the sulcus for 4 minutes.

Les tissus péridentaires et péri-implantaires sont substantifiquement différents.

Les tissus péri-implantaires sont plus fragiles : leur système d'attache est moins adhérent, plus perméable et leur capacité de régénération inférieure.

Une matrice à base de kaolin et de chlorure d'aluminium :
- *permet une déflexion atraumatique (absence de lacération ; moins de risque d'inflammation, etc),*
- *ouvre et assèche le sulcus en évitant les artefacts - et les erreurs d'interprétation qui en découlent - dus aux fibres des fils de rétraction subsistant dans le sulcus.*

Dans le cas d'empreinte à base de polyvinylsiloxane, une épaisseur de 0,2 millimètre de matériau dans le sulcus est suffisante pour assurer une bonne précision. Une ouverture sulculaire plus large est nécessaire dans le cas d'empreinte numérique par CAD/CAM.

Les cordonnets utilisés autour d'un implant peuvent provoquer ulcération et retard de cicatrisation. De plus pour obtenir une ouverture sulculaire de 0,2 millimètre, le cordonnet rétracteur doit être laissé en place pendant 4 minutes.

Fragility of peri-implant tissues. ulceration and delayed healing are possible due to cord.

Fragilité des tissus péri-implantaires. Possibles ulcérations et retard de cicatrisation dus au cordonnet.

4.

Optical impression

Empreinte optique

Enhancing a smile with cad/cam restorations 34

Margin isolation for optical impression
and adhesion 35

Clinical case / Cas clinique: Dr Erwan BOULIC - France

Enhancing a smile with CAD/CAM restorations

Ara Nazarian.
DDS, Private practice, Troy, Michigan, USA.
Dentistry Today, 2008 July;140-142

The treatment plan provides to restore an entire maxillary dentition.

Expasyl is chosen - instead of the traditional cord technique - due to its ability to allow a (quick) full-arch impression.

Le plan de traitement prévoit la restauration complète d'une arcade maxillaire.

Expasyl est sélectionné - en lieu et place du cordonnet - car il permet la prise d'empreinte (rapide) d'une arcade complète.

Margin isolation for optical impression and adhesion

Rich Masek.
DDS, San Diego, California, USA.
International Journal of Computerized Dentistry, 2005;8:000-000

Cerec CAD/CAM procedure is not designed to wait 2 weeks healing of traumatized gingiva.

Due to Expasyl and good tissue management, the single-visit Cerec procedure is more reliable and easier.

The residue of hemostatic gels & liquids stain the margins & luting agent.

Retraction cord can:
- traumatize the gingiva
- leave artifacts (as fibers) which reduce the accuracy of a Cerec optical impression

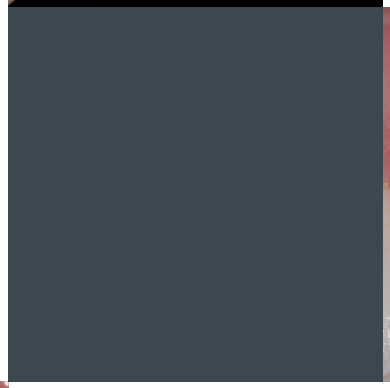
La procédure de CFAO Cerec n'envisage pas d'attendre 2 semaines, délai nécessaire pour obtenir la cicatrisation des tissus endommagés.

Grace à Expasyl et à une bonne gestion des tissus, la procédure de mono-visite Cerec est plus sûre et plus simple.

Les résidus de gels et liquides hémostatiques colorent la dent et les matériaux de scellement.

Le cordonnet rétracteur peut :
- *endommager les tissus gingivaux*
- *nuire à la précision de l'empreinte optique Cerec (artéfacts de par la persistance de fibres dans le sulcus)*

5.



Clinical case / Cas clinique: Dr Jean-François LASSERRE - France

Advantages of a gingival retraction paste

Avantages d'une pâte de rétraction gingivale

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Expasyl™: an alternative to gingival retraction procedures, clinical and financial assessment..... 41

An innovative tissue-retraction material

Stephen Poss.
DDS, Private practice, Brentwood, Tennessee, USA.
Compendium of Continuing Education in Dentistry, 2002 Jan;23 (1 Suppl):13-17

Abstract

One of the most challenging problems of fixed prosthodontics is tissue control. Gingival retraction before a final impression can be very frustrating and time consuming. Many different techniques have been developed over the years to accommodate the clinician's struggle to obtain tissue control and achieve an ideal impression. This article discusses several of those techniques and how the new, innovative product Expasyl can be incorporated into these techniques. Expasyl is an injectable retraction and hemostatic agent that can cause little trauma to the tissue as well as save the dentist time and money. The author elaborates on the multiple uses of Expasyl and the correct techniques for making this material a successful tool in any dental office.

Expasyl reduces chairtime.

Due to its gentleness, there is less risk of damage to the epithelial attachment and a better prevention of gingival recession or bone resorption.

The forces induced by Expasyl are around:
• 20 times inferior to those of a single cord
• 50 times inferior to those of a double cord

Expasyl réduit le temps passé au fauteuil.

De par sa haute tolérance, le risque d'endommager l'attache épithéliale et d'induire une récession gingivale et une résorption osseuse est inférieur.

Les forces générées par Expasyl sont environ :
• 20 fois inférieures à celles générées par le simple cordonnet
• 50 fois inférieures à celles générées par le double cordonnet

Expanded clinical uses of a novel tissue-retraction material

Andrew Shannon.
BSc, DDS, Private practice, Vancouver, British Columbia, Canada.
Compendium of Continuing Education in Dentistry, 2002 Jan;23 (1 Suppl):3-6

Abstract

Impression making for all fixed prostheses requires access to the prosthetic margin while minimally traumatizing the tissue, so that clinicians can provide as much clinical information as possible to the laboratory technician. This information allows the technician to design the prosthesis to meet the criteria of the periodontium and allows the gingival tissues to recover to their original state. Until now, there have been three traditional options in the armamentarium for retraction procedures: packing cord, electrosurgery, and laser surgery. These procedures all have degrees of trauma that vary based on the experience of the clinician. The gingival tissue may be very delicate and susceptible to recession if too much trauma occurs. This article describes an expanded use of Expasyl, a newly introduced tissue retraction material, as it relates to minimally invasive tissue management, while still providing an ideal gingival tissue environment for long-term health.

Gingival retraction has been one of the most important challenges since the beginning of prosthetic dentistry.

Expasyl properties:
• Minimal trauma to the gingiva
• Perfect hemostasis
• Can be combined with single-cord
• Multiple indications: class V, class II, direct or indirect dentistry, implants, adhesive dentistry

La rétraction gingivale constitue un des challenges parmi les plus importants depuis l'avènement de la dentisterie prothétique.

Les principales propriétés d'Expasyl sont :
• Traumatisme gingival minime
• Parfaite hémostase
• Combinaison possible avec le simple cordonnet
• Indications multiples : classe V, classe II, dentisterie directe et indirecte, implantologie, dentisterie adhesive

A predictable gingival retraction system

Christopher Pescatore.
DMD, Private practice, Danville, California, USA.
Compendium of Continuing Education in Dentistry, 2002 Jan;23(1 Suppl):7-12

Abstract

Predictable tissue retraction for impressions and insertion of restorations can be a laborious task for many dental professionals. The Expasyl paste retraction system has significantly improved the ability to achieve tissue management even under the most difficult situations and in less time. This article demonstrates the use of this paste retraction system to control tissue for impression making as well as for the insertion of adhesively placed nonmetal restorations.

If there is extended contact (>2 minutes) with water or saliva, Expasyl loses its body & thus effectiveness on sulcular opening.

The paste must be introduced into the sulcus very slowly (2mm/second).

Expasyl is a time-saver.

Expasyl is also an excellent product to use during cementation.

En cas de contact prolongé (> 2 minutes) avec l'eau ou la salive, Expasyl voit sa viscosité et donc son efficacité sur l'ouverture sulculaire amoindries.
La pâte doit être appliquée très lentement dans le sulcus à raison de 2 mm / seconde.
Expasyl permet de gagner du temps.
Expasyl est par ailleurs un excellent matériau à utiliser lors de la phase de scellement.

Advantages of a gingival retraction paste

Expasyl™: an alternative to gingival retraction procedures, clinical and financial assessment

Patrick Simonet.
Chirurgien dentiste, Paris, France.
Alternatives, 2001 Nov;Number 12, 47-50

With Expasyl clinical time is gained (more important in case of multiple preparations; especially for clinicians working alone) and reduced financial cost VS the simple cord technique:
• Expasyl / single impression = 3.65 €
• Retraction cord and hemostatic / single impression = 4.46 €

Expasyl allows to perform tooth preparation and impression taking in the same clinical phase.

With Expasyl, anesthesia is not necessary.

Expasyl permet un gain de temps clinique (d'autant plus important qu'il est question de préparation multiple et plus particulièrement lorsque le praticien travaille sans assistante) et une réduction du coût versus la technique du simple cordonnet :
• Expasyl / empreinte unitaire = 3,65 €
• Cordonnet rétracteur et hémostase / empreinte unitaire = 4,46 €

Expasyl permet de réaliser la préparation et la prise d'empreinte au cours de la même phase clinique.

Avec Expasyl, l'anesthésie n'est plus nécessaire.

References	Products / *Produits*
EXPASYL™ EXACT (0.3g CAPSULES / *CAPSULES DE 0,3 g*)	
Ref. 261 011	Expasyl™ Exact x 50
Ref. 261 010	Expasyl™ Exact x 20
Ref. 260 920	Applicator / *Applicateur*
EXPASYL™ - KIT & APPLICATOR (1g CAPSULES) / *KIT & APPLICATEUR (CAPSULE DE 1 g)*	
Ref. 294 100	Minikit: 1 Applicator + 6 Capsules + 12 Straight Cannulas (bendable) *Minikit : 1 Applicateur + 6 Capsules + 12 canules droites (coudables)*
Ref. 260 900	Applicator / *Applicateur*
EXPASYL™ - CAPSULES & CANNULAS (1g CAPSULES) / *CAPSULES & CANULES (CAPSULE DE 1 g)*	
Ref. 261 030	Capsules x 20
Ref. 294 010	Capsules x 6
Ref. 261 001	Strawberry Capsules x 20 / *Capsules Fraise x 20*
Ref. 261 005	Straight Cannulas (bendable) x 100 / *Canules droites (coudables) x 100*
Ref. 261 040	Straight Cannulas (bendable) x 40 / *Canules droites (coudables) x 40*
Ref. 261 015	Pre-bent Cannulas x 100 / *Canules pré-coudées x 100*
Ref. 261 045	Pre-bent Cannulas x 40 / *Canules pré-coudées x 40*

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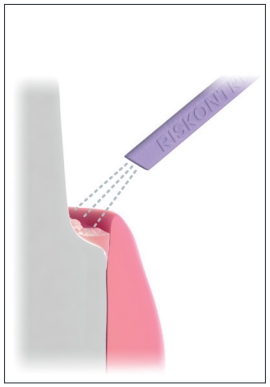
Disponible selon les pays. Renseignez-vous auprès de votre distributeur.

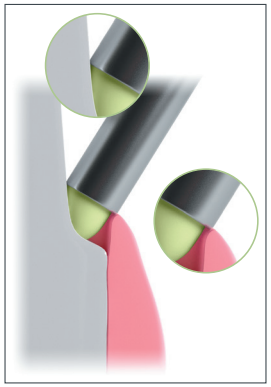
Avantages d'une pâte de rétraction gingivale

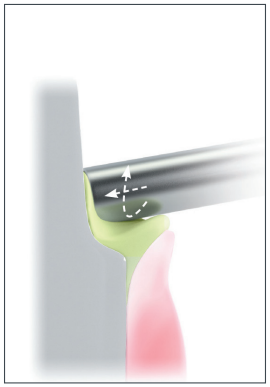
expasyl

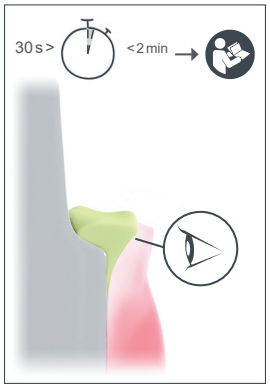
The greatest partner for a natural and aesthetic prosthesis

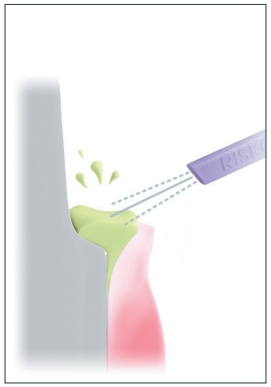
Le meilleur allié pour une prothèse naturelle et esthétique

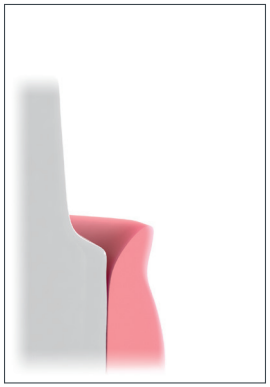












expasyl exact

One dose, one patient

Une dose, un patient