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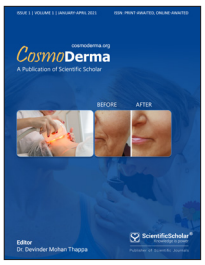

Focus

Consensus on APTOS threads – excellence product line models selection rule for midface application

George Sulamanidze[1], Albina Kajaia[2], Marlen Sulamanidze[1], Constantin Sulamanidze[1], Murat Tsintsadze[3], Deniz Demiryürek[4], Ahmed Abdelaziz Mohamed[5], Ana Bendito Torija[6], Bozena Jendrysik[7], Natalia Markova[8], Irina Poleva[9], Alberto Diaspro[10], Igor Gulyaev[11]

[1]Clinic of Plastic and Aesthetic Surgery and Cosmetology "Total Charm Orbeliani", [2]Clinic of Plastic and Aesthetic Surgery and Cosmetology "Total Charm Vake", Tbilisi, [3]BAU Faculty of Medicine, BAU International University, Batumi, Georgia, [4]Department of Anatomy, Hacettepe University Faculty of Medicine, Ankara, Turkey, [5]Z Clinic, Cairo, Egypt, [6]Department of Pediatrics, Martina Children's Hospital, Stockholm, Sweden, [7]Department of Plastic Surgery, Veno-Med Medical Center, Lubliniec, Poland, [8]Department of Dermatology, Medical Esthetic CRO, Prague, Czech Republic, [9]Department of Pharmaceutical and Health Product Sciences, UNICAM (University of Camerino), Camerino, [10]Department of Maxillo-Facial Surgery, Medynet Centre, Turin, Italy, [11]Clinic of Plastic and Aesthetic Surgery and Cosmetology "Total Charm," Moscow, Russian Federation.

***Corresponding author:**
Dr. George Sulamanidze, Plastic Surgeon, Total Charm Orbeliani, 18 Vakhtang Orbeliani Street, 0105, Tbilisi, Georgia.

aptos@aptos.ge

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INTRODUCTION

In recent years, the field of esthetic medicine has witnessed remarkable advancements, with minimally invasive procedures gaining prominence for their ability to offer significant improvements in facial and body contouring without the extensive downtime associated with traditional surgery.[1,2] A 2023 report by the American Society of Plastic Surgeons highlights a 7% increase in minimally invasive procedures compared to the previous year, indicating growing performance in this field.[3] Among these advancements, APTOS thread lifting has emerged as a pioneering technique, drawing attention for its innovative approach to soft-tissue repositioning and skin rejuvenation.[4] Originating from a blend of scientific research and clinical practice, APTOS threads are designed to address the signs of aging by providing lift and structural support to sagging tissues, thereby restoring youthful contours, and improving skin texture.[5]

APTOS thread lifting methods utilize biocompatible, bioabsorbable threads that are strategically placed under the skin to achieve lifting and tightening effects.[5] These threads not only support the tissue mechanically but also stimulate collagen production, contributing to long-term rejuvenation.[6] The technique's versatility allows for its application across various areas of the face and body, making it a customizable solution tailored to individual patient needs and esthetic goals.

The development and refinement of APTOS threads are underpinned by rigorous scientific investigation, including studies on material biocompatibility, mechanical properties, and the biological response elicited by thread insertion. As esthetic medicine continues to evolve, the integration of scientific insights into clinical practice is crucial for optimizing patient outcomes and advancing the field.

PURPOSE

This consensus protocol aims to establish standardized criteria for selecting APTOS Threads Excellence Product Line models, ensuring that practitioners have access to scientifically and

clinically justified guidelines. By incorporating expert opinions and current research, this protocol seeks to enhance the efficacy of minimally invasive aesthetic treatments, particularly thread lifting using the Excellence Product Line models. In addition, it aims to assist in selecting the appropriate patient population to maximize treatment effectiveness.

METHODS

Expert panel composition

To develop this consensus protocol, a multidisciplinary panel of 14 experts was assembled, compromising specialists in aesthetic medicine, dermatology, plastic surgery, and anatomy. Each expert brought extensive experience in the application of APTOS threads, ensuring comprehensive and informed discussion on the selection criteria for the Excellence Product Line models.

Meeting format and process

The consensus process was conducted through a series of structured virtual meetings, utilizing digital platforms to facilitate comprehensive discussions. These sessions focused on various aspects of APTOS threads' application in clinical practice, with particular emphasis on the Excellence Product Line models. The discussions revolved around several key topics, including the optimal thread lengths for different applications, patient selection criteria, and the expected clinical outcomes for each model and variant within the product line.

This process of consensus achievement among the experts was based on the Delphi method and involved multiple rounds of discussions and anonymous voting on predetermined criteria related to each thread model, with the aim of achieving a high level of agreement among the panelists. Consensus was defined as >75% agreement on each criterion.

Data management and statistical analysis

The raw data from experts' responses were divided, organized, and cleaned separately for each device.

Statistical analysis employed Interclass relationship Interclass correlation coefficient ($ICC_{3k)}$ score based on the calculation according to the Guideline by Koo and Li (2016) with ICC_{3k} corresponding to two-way mixed effects, consistency, and multiple raters/measurements.[7] The score was calculated using R Core Team (2021) Version 2024.04.2 + 764 statistical software, with the packages "irr" and "psych."[8-10] For descriptive statistics, Microsoft Excel® 2024 version 16.87 was used.

Discussion point

Key topics included: The discussion of thread lengths present in Excellence Product Line models, application techniques, patient selection, and expected clinical outcomes for each APTOS thread Excellence Product Line model/variants.

Meeting-agreement topics:

The primary goal was to agree on specific criteria for selecting APTOS thread models, focusing on:

- Visage excellence method/visage excellence method hyaluronic acid (HA) variants with 19 cm length of each thread in the package are ideal for patients with more than 10 cm distance from the projection of zygomaticus arch to mandibular ligament (length of longest threads implantation trajectory in application area).
- Visage excellence soft method/visage excellence soft method HA variants with a 10 cm length of each thread in the package are ideal for patients with 8–10 cm of distance from the projection of zygomaticus arch to mandibular ligament (length of longest threads implantation trajectory in application area).
- The Nano excellence method and HA variant with an 8 cm length of each thread in the package are ideal for patients with <8 cm distance from the projection of the zygomaticus arch to the mandibular ligament (length of longest threads implantation trajectory in application area).

Distance from the projection point of the zygomatic arch to the projection of the mandibular ligament will be measured using a digital ruler or non-digital ruler [Figures 1 and 2].

During the consensus process, the panel of experts answered 18 specific questions to assess how suitable each APTOS Threads Excellence Product Line model is for midface treatments. The questions focused on various aspects, such as how well the threads work in different areas of the face, how natural the results look, how comfortable the procedure is for patients, and the risk of complications.

Thus, for the Visage Excellence Method and its HA variant with 19 cm threads, the experts looked at how effective these threads are for patients with a midface distance >10 cm. They did the same for the Visage Excellence Soft Method with 10 cm threads, focusing on patients with an 8–10 cm distance, and for the Nano Excellence Method with 8 cm threads, focusing on patients with a distance of <8 cm.

The questions also covered overall satisfaction with each method, how cost-effective they are, and how easy they are to use in practice. The answers to these questions helped the experts develop recommendations for the best use of each thread model, ensuring that the procedures are both effective and safe for patients.

Figure 1: Thread implantation trajectory measurement method on patient.

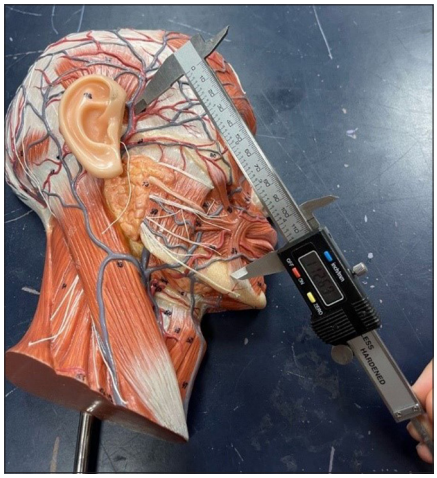

Figure 2: Visualization of anatomical points used for thread implantation trajectory measurement.

RESULTS

Visage excellence method/visage excellence method HA variants (19 cm length)

For patients with a distance of more than 10 cm from the zygomaticus arch to the mandibular ligament, the visage excellence method and its HA variant (19 cm length) were highly rated by the experts. Specifically, 64.3% of the panelists rated these models as highly suitable, with the majority indicating a very low risk of complications. In terms of effectiveness in the target area, the same 64.3% of experts rated these models as highly effective, reflecting strong confidence in their ability to achieve the desired esthetic outcomes.

When evaluating the natural appearance of results, 57.1% of the experts rated the outcomes as highly natural, with the remaining experts rating them as very natural. The comfort and tolerability of the procedure were also rated favorably, with 28.6% of the experts describing the procedure as highly comfortable for patients, while 57.1% rated it as very comfortable. Importantly, 71.4% of the experts rated the risk of complications as very low, highlighting the safety profile of these models.

Visage excellence soft method/visage excellence soft method HA variants (10 cm length)

For patients with a distance of 8–10 cm from the zygomaticus arch to the mandibular ligament, the visage excellence soft method and its HA variant (10 cm length) were deemed highly suitable by 50% of the panelists. The effectiveness in the target area was similarly rated, with 50% of experts considering the models highly effective and another 28.6% rating them as very effective.

The natural appearance of results was rated as highly natural by 57.1% of the experts, with the remaining panelists rating it as very natural. Patient comfort and tolerability were also well-regarded, with 50% of the experts describing the procedure as highly comfortable and 42.9% as very comfortable. Regarding the risk of complications, 64.3% of the experts rated it as very low, further supporting the safety of these models for this specific application.

Nano excellence method/HA variant (8 cm length)

For patients with a distance of <8 cm from the zygomaticus arch to the mandibular ligament, the suitability of the Nano Excellence Method and its HA variant (8 cm length) were assessed as high by 64.3% of the panelists. Effectiveness in the target area was also rated highly, with 71.4% of experts deeming these models as highly effective.

The natural appearance of results was consistently rated as highly natural by 42.9% of the experts, with the remainder rating it as very natural. Patient comfort and tolerability were similarly well-rated, with 50% of the panelists describing the procedure as highly comfortable. The risk of complications was again rated as very low by 71.4% of the experts, emphasizing the safety and reliability of these models. A detailed breakdown of these findings is shown in Table 1.

General criteria across all methods

In addition to the model-specific evaluations, the experts provided assessments based on general criteria across all models. Overall, satisfaction with the APTOS Threads Excellence Product Line models was high, with 57.1% of the experts expressing high satisfaction and 42.9% indicating

Table 1: Evaluation of visage excellence method/visage excellence method HA; Visage excellence soft method/visage excellence soft method HA; Nano excellence method/nano excellence method HA variants for midface distance >10; 8–10 or<8 cm.

Questions	Responses	Number of Responses (% of all responses)		
		Midface distance >10 cm- evaluation of visage excellence method/ visage excellence method HA variants (19 cm length)	Midface distance 8–10 cm - evaluation of visage excellence soft method/visage excellence soft method HA variants (10 cm length)	Midface distance <8 cm - evaluation for nano excellence method/ nano excellence method HA variant (8 cm length)
Suitability for>10; 8–10 or<8 cm distance	Not suitable	0	0	0
	Slightly suitable	0	2 (14.3%)	0
	Moderately suitable	0	1 (7.1%)	3 (21.4%)
	Very suitable	5 (35.7%)	4 (28.6%)	2 (14.3%)
	Highly suitable	9 (64.3%)	7 (50.0%)	9 (64.3%)
Effectiveness in the target area	Not effective	0	0	0
	Slightly effective	0	1 (7.1%)	0
	Moderately effective	0	2 (14.3%)	2 (14.3%)
	Very effective	5 (35.7%)	4 (28.6%)	2 (14.3%)
	Highly effective	9 (64.3%)	7 (50.0%)	10 (71.4%)
The natural appearance of the results	Not natural	0	0	0
	Slightly natural	0	0	0
	Moderately natural	0	0	0
	Very natural	6 (42.9%)	6 (42.9%)	8 (57.1%)
	Highly natural	8 (57.1%)	8 (57.1%)	6 (42.9%)
Patient comfort and tolerability	Not comfortable	0	0	0
	Slightly comfortable	0	0	0
	Moderately comfortable	2 (14.3%)	1 (7.1%)	2 (14.3%)
	Very comfortable	8 (57.1%)	6 (42.9%)	5 (35.7%)
	Highly comfortable	4 (28.6%)	7 (50.0%)	7 (50.0%)
Risk and Complications	High risk (severe complications)	0	0	0
	Moderate to high risk (significant complications)	0	0	0
	Moderate risk (moderate complications)	0	0	0
	Low risk (mild complications)	4 (28.6%)	5 (35.7%)	4 (28.6%)
	Very low risk (minimal complications)	10 (71.4%)	9 (64.3%)	10 (71.4%)

HA: Hyaluronic acid

very high satisfaction. The cost-effectiveness of these models was also rated favorably, with 78.6% of the experts considering them very cost-effective. Finally, the ease of application was well-regarded, with 57.1% of the panelists finding the models very easy to apply in clinical practice. A detailed breakdown of these findings is shown in Table 2.

Statistical analysis

Descriptive statistics revealed a clear consensus among raters based on their anonymous responses. Table 3 presents the results of these statistics for each device. The data indicate that the visage excellence method/visage excellence method HA variants (19 cm length) were evaluated by experts as having high suitability, effectiveness, and natural appearance, with very good comfort and tolerability for patients, and very low risk and complications.

The visage excellence soft method/visage excellence soft method HA variants (10 cm length) were rated as very suitable and effective, with a highly natural appearance, very good comfort and tolerability for patients, and very low risks and complications.

The nano excellence method/HA variants (8 cm length) were also noted for high suitability, effectiveness, very natural appearance, and very good comfort and tolerability, with

Table 2: Summary of expert ratings using the 5-level scale (1-extremely low, 2-below moderate, 3- moderate, 4-very good, and 5-extremely high) for general criteria across all the 3 product variants.

Criteria	Overall assessment	Response categories	Number of responses (% of all responses)
Overall satisfaction	Mean: 4.57	Not satisfied	0
	Median: 5	Slightly satisfied	0
		Moderately satisfied	0
		Very satisfied	6 (42.9)
		Highly satisfied	8 (57.1)
Cost-effectiveness	Mean: 4.07	Not cost-effective	0
	Median: 4	Slightly cost-effective	0
		Moderately cost-effective	1 (7.1)
		Very cost-effective	11 (78.6)
		Highly cost-effective	2 (14.3)
Ease of application	Mean: 4.07	Not easy to apply	0
	Median: 3.93	Slightly easy to apply	1 (7.1)
		Moderately easy to apply	2 (14.3)
		Very easy to apply	8 (57.1)
		Extremely easy to apply	3 (21.4)

Table 3: Mean and median responses on suitability, effectiveness, natural appearance, comfort and tolerability, and risk and complications from 14 raters for the 3 devices.

Device		Criteria				
		Suitability	Effectiveness	Natural appearance	Comfort and tolerability	Risk and complications
Visage excellence method/visage excellence method HA variants (19 cm length)	Mean	4.64	4.64	4.57	4.14	4.71
	Median	5	5	5	4	5
Visage excellence soft method/visage excellence soft method HA variants (10 cm length)	Mean	4.14	4.21	4.57	4.43	4.64
	Median	4.5	4.5	5	4.5	5
Nano excellence method/HA variant (8 cm length)	Mean	4.43	4.57	4.43	4.36	4.71
	Median	5	5	4	4.5	5

The numbers indicate the 5-level scale scores (For suitability, effectiveness, natural appearance, comfort, and tolerability: 1 - extremely low, 2 – below moderate, 3 – moderate, 4 – very good, 5 - extremely high; for Risks and Complications: 1 - High Risk [Severe Complications], 2 - Moderate to High Risk [Significant Complications], 3 - Moderate Risk [Moderate Complications], 4 - Low Risk [Mild Complications], 5 - Very Low Risk [Minimal Complications]). HA: Hyaluronic acid

very low risks and complications. All raters also answered the questions regarding overall satisfaction, which was assessed as highly satisfied, very cost-effective, and very easy to apply in regard to all devices.

Good consensus between the raters is supported by ICCs, [Table 4]. According to Table 4, there was good agreement among all raters regarding the visage excellence method/visage excellence method HA variants (19 cm length) with ICC = 0.753 and high statistical significance (P = 0.006). However, for the visage excellence soft method/visage excellence soft method HA variants (10 cm length) and nano excellence method/HA variant (8 cm length), the agreement was lower, but this low agreement was not statistically significant, as indicated by $P > 0.05$. This means the lower agreement was not validated. Overall, the assessment of all products across all criteria showed the highest ICC = 0.836, which was statistically significant (P = 0.006).

Table 4: ICC_{3k} for each device based on the raters' responses.

Device	ICC_{3k}	*P*-value
Visage excellence method/visage excellence method HA variants (19 cm length)	0.753	0.006*
Visage excellence soft method/visage excellence soft method HA variants (10 cm length)	0.37	0.191
Nano excellence method/HA variant (8 cm length)	0.276	0.258
Overall assessment	0.836	0.006*

*$P<0.05$ indicating the statistically significant agreement as measured by the ICC, HA. ICC_{3k}: Interclass correlation coefficients, HA: Hyaluronic acid

CONCLUSION

This consensus protocol successfully establishes standardized criteria for selecting APTOS threads Excellence Product Line models used in minimally invasive esthetic treatments, particularly thread lifting. By incorporating expert opinions and current research, the protocol offers scientifically and clinically justified guidelines for optimal model and patient selection. The evaluation by 14 experts highlighted the visage excellence method/visage excellence method HA variants (19 cm length) as highly suitable, effective, and reliable, with very good patient comfort and minimal risks. Similarly, the Visage Excellence Soft Method/Visage Excellence Soft Method HA variants (10 cm length) and Nano Excellence Method/HA variant (8 cm length) were also assessed by experts as highly suitable and effective, with excellent natural appearance and patient tolerability. The overall high consensus among raters, reflected by a statistically significant agreement score of 0.836, underscores the robustness of the protocol. Despite lower agreement for some models, the results remain statistically significant, validating the protocol's efficacy in guiding practitioners toward optimal esthetic treatment choices.

Ethical approval

The Institutional Review Board approval is not required.

Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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