Received: 24 October 2023 | Revised: 8 December 2023 | Accepted: 9 February 2024

DOI: 10.1111/scd.12979

CASE REPORT

WILEY

Aesthetic oral rehabilitation of the upper-anterior sector with supra-nano filling resin in a patient with woolly hair syndrome: case report

Patricia Nataly Conto Quispe[1] | **Akemy Celeste Tapia Martinez**[2] | **Henry Jesús Vilcapoma Guerra**[3] | **Lenny Lavado García**[4] | **Gilmer Torres Ramos**[1]

[1]Faculty of Dentistry, Universidad Nacional Mayor de San Marcos, Lima, Peru

[2]Faculty of Dentistry, Universidad Nacional Mayor de San Marcos, Lima, Peru and Dentistry Department, National Police Hospital of Peru Luis N. Saenz, Lima, Peru

[3]Faculty of Dentistry, Universidad Nacional Mayor de San Marcos, Lima, Peru and Dentistry Department, Central Hospital of the Peruvian Air Force, Lima, Peru

[4]Faculty of Dentistry, Universidad Nacional Mayor de San Marcos, Lima, Peru and Dentistry Department, Instituto Nacional de Salud del Niño, Lima, Peru

Correspondence
Henry Jesús Vilcapoma Guerra, José Santos Chocano Avenue 338, Los Olivos, Lima,– Perú.
Email: hvilcapomagu@unmsm.edu.pe

Abstract

Background: Woolly Hair Syndrome (WHS) is a rare birth condition that affects the structure of hair in non-black people. The pathogenesis is not yet defined. It is postulated that the hair follicle's desmosomes (specifically desmoplaquine, placoglobin and placofilin-1, which are cell structural proteins that keep the adhesion among close cells) would be altered in this pathology, leading to fragility in the cellular union. It is subdivided into two large groups: the localized or circumscribed variant and the generalized variant. From birth or first months of life, patients with WHS are clinically characterized by the presence of a portion or entire scalp area of very short frizzy hair, usually of a smaller diameter, brittle and lighter color. The most frequent skin manifestations are pilar keratosis and palmo-plantar keratodermia. The diagnosis is based on the clinical findings, and it is facilitated by trichotoscopic examination. However, a definitive diagnosis of WHS requires genetic testing. Oral agenesis, enamel defects (such as hypomineralization), atypical caries, dental inclusion, and malformed pin-shaped teeth may occur.

Objective: To describe an aesthetic alternative of oral rehabilitation using the mock-up technique in a patient with WHS.

Clinical case: A 5-year-old female patient diagnosed with WHS from the National Institute of Child Health

Nihch: Breña, Lima, who was referred from the Genetic service to the Pediatric Dentistry service in order to screen outbreaks of infection associated with odontogenic origin and dental anomalies. At the ectoscopy, a patient with short capillary length, brittle and curly hair, dry skin, and nail dystrophy was observed. At the intraoral clinical examination, anterior pieces of 52, 51, 61, 62, and enamel hypomineralization were observed in all teeth. The radiographic examination showed agenesis of parts 41, 34, and 45. Integral dental treatment was performed in the operating room under general anesthesia due to the complexity of the case.

© 2024 Special Care Dentistry Association and Wiley Periodicals LLC.

Pulpectomy in pieces 52, 51, 61, 62, post of composite resin, and rehabilitation with supra-nanow filling resin using the mock-up technique were proposed as alternative treatments.

Conclusion: The making of supra-nano filling resin-based crowns using the mock-up technique is an alternative treatment for aesthetic oral rehabilitation in deciduous dentition of patients with WHS. The aesthetic treatment was achieved using supra nano-filling resins. After 12 months of dental treatment, a favorable response was observed, improving the chewing, phonation and aesthetics of the patient.

KEYWORDS
dental aesthetics, mock-up, Oral rehabilitation, supra-nano filling resin, Woolly Hair Syndrome

1 | INTRODUCTION

Woolly Hair Syndrome (WHS) is a rare congenital abnormality of the hair structure[1] characterized by tightly rolled hair in one portion or the whole scalp, generally in individuals of non-black origin.[2] It was first observed and described by Gossage in 1907 in a European family, involving structural defects in the hair shafts that are commonly seen in Caucasians and Asians.[3] It is present at birth with reduced diameter of the hair shafts, which usually grows only up to 2–3 cm due to a short or truncated anagen phase[2–4]. In the cross-section, the hair follicle appears oval and not round[4], the hair root is usually dystrophic and has no pod[4].

In 1974, Hutchinson et al. classified WHS in two variants[5]: a localized variant and a generalized variant with curly, sparse, thin, brittle, and short hair since birth.[6,7]

When WHS is accompanied by palmoplantar keratodermia, it may be associated with a fatal cardiomyopathy such as Carvajal syndrome or Naxos syndrome.[8] Therefore, this condition should alert the doctor about a heart disease.[9,10]

A family diagnosed with WHS and characteristics of ectodermal dysplasia in the form of nail dystrophy and acral oral hyperkeratosis[11,12] was reported to have dental abnormalities such as: agenesis (lack of a tooth development due to genetic causes) and enamel defects such as hypomineralization, atypical caries, and odontomas (benign odontogenic tumors composed of odontogenic epithelium and odontogenic ectomesenchyma).[11,13] The Congenital abnormality of the hair structure (WHS) and the tooth enamel conditions would be closely related since both structures have an ectodermal origin.

The pathogenesis is not yet defined. It is postulated that the structural cellular proteins, desmosomes, of the hair follicle (specifically desmoplaquine, placoglobin, and placofilin-1), would be altered, producing fragility in the cellular union and, therefore, a deregulation in the development of the follicle[14].

The diagnosis for WHS is based on clinical findings and it is facilitated by tricoscopic examination where it is revealed that the hair shafts have waves at short intervals,[4,15] although a definitive diagnosis of WHS requires genetic testing.[15]

WHS is more evident during childhood. The appearances may become less severe in adulthood as the medical management improves with the age.[15] However, some people do not get better with age.[16,17] Non-ablative fractional laser treatment stimulated the normal hair growth in three adult men with WHS.[17]

The alternatives of dental treatment 20 years ago were scarce. Exodontics was the treatment of choice. Thus, 15-year-old patients with dental prothesis could be observed[12]. In 2001, a family reported with WHS, presented premature tooth loss due to atipical caries lesions[12] resulted from hypomineralization of the enamel. For those times, the alternative treatment was exodontics and dental prosthesis.

At present, the dental management in a patient with WHS is multidisciplinary. The evolution of adhesive systems and composite resins have led to the development of various restorative aesthetic techniques[18] with the aim of repairing color, shape alterations, and subsequently, restoring the function, and improving the aesthetics.[18,19]

The ideal restoration for temporary anterior teeth should be imperceptible.[19] Thus, some aspects are required: It has to be the same color of the tooth,[20] it has to be durable, it should not need additional treatment, it should be able to adhere to the prepared tooth through a compatible material and finally, it should be easy and quick to apply.[18,20]

Supra-nano filling resin, Estelite Omega (Tokuyama Dental Corporation), provides outstanding aesthetics and

high polymerization activity based on supra-nano spherical filling technology, with 82% in weight and 71% in volume, filled and composite of silica-zirconio.[21] This large amount of filler reduces polymerization shrinkage. The inorganic base is composed of spherical particles[22] (between 100 and 300 nm, average size 200 nm) that provide excellent brightness retention and wear resistance. The monomeric matrix contains bisphenol-A di(2-hydroxy propoxi) dimethacrylate (Bis-GMA) and triethylene glycol dimethacrylate (TEGDMA). [21,22]

The supra-nano spherical filler compound provides numerous benefits: easy handling, excellent combination with surrounding teeth, [22,23] fracture resistance, high gloss, initial and long-term polishing retention, durable stability without damaging opposite teeth,[24] low volumetric shrinkage (1.3%) to resist marginal leakage, surface softness, and reduced abrasion that would give you long-term wear resistance.[21,25]

The purpose of this work is to describe a case of aesthetic oral rehabilitation using supra-nano filling resins in a patient with WHS syndrome.

The purpose of this work is to describe a case of a patient with WHS syndrome who presents structural problems of the dental enamel and multiple dental cavities, which affects aesthetics and chewing functions. In addition, an aesthetic alternative for oral rehabilitation is described using the Mockup technique using supranan filling resins.

2 | CASE REPORT

2.1 | Patient information

Female patient of 5 years and 4 months, of mixed race, coming from the district of Sicuani, province of Canchis, located in the department of Cusco, of medium low socioeconomic level. The patient goes to the medically affected Patients Unit of the Estomatology Service of the National Institute of Child Health (NICH), Lima-Peru. The mother said that they were transferred from the Gegenetics and Dermatology Areas to the Integral Dental Treatment Area.

2.2 | Background

In the prenatal history, the mother reports that her daughter is the product of a second pregnancy, in the second trimester of pregnancy she received treatment for urinary infection, she had complete prenatal checks. The birth was by dyscoccal delivery before the 8th month (as it was suggested by the doctor). The weight of the baby was 2100 kg and she had to be 2 days in an incubator and, subsequently, hospitalized for a week. In the post-natal history, she had exclusive breastfeeding until her 6th month, ablation at the 6 months, and a breastfeeding time until her 18th month.

According to the medical history, at the age of 9 months, the baby was taken to the hospital of Sicuani for an evaluation since her hair and nails were not normal. The patient was not given any diagnosis and the case was reported as "normal." At the age of 5 years, the NICH diagnosed acute keratitis and congenital defects associated with WHS. As for the family history, apparently healthy parents and the mother expressed that her husband had a nephew with the same characteristics as her daughter.

Regarding to her stomatological background, the mother refers that her daughter's first dentist appointment was at the age of two, in her hometown, where the toddler refused to be evaluated.

3 | CLINICAL FINDING

3.1 | Physical examination

In the general physical examination, the following was reported: oxygen saturation 98%; heart rate 84 beats per minute, respiratory rate 24 per minute, weight 16 700 kg, dry warm skin, absence of eyebrows and eyelashes (Figure 1A), absence of hair length on the scalp (Figure 1B), nail diastrophy in hands and feet (Figure 1C). In cardiopulmonary auscultation, there was no irregular noise, no heart murmur; the central nervous system was active, oriented in time, space, and person. It also received and responded to orders properly.

In the extraoral stomatological clinical examination, a mesofacial pattern was observed, a mesocephalic pattern without facial asymmetries and the reduction of the occlusal vertical dimension due to the partial loss of dental structures (Figure 1A).

3.2 | Intraoral examination

Intraoral examination in soft tissues revealed moderate gingival inflammation, presence of fistulas in the vestibular gum at the level of pieces 74 and 85. In the evaluation of hard tissues defects of the enamel were observed, the type of dentition is early mixed, absence of 2/3 of dental structure at the level of the pieces 52,51,61,62, large-scale active carious lesions with apparent pulp involvement in the posterior sector in pieces 54, 64, 75, 84, root remnant of the pieces 74, 85, and poor oral hygiene. A type II Baume arch is also seen in both jaws (Figure 2).

A panoramic x-ray was requested. The absence of enamel radiopacity at incisal edge level in the piece 51

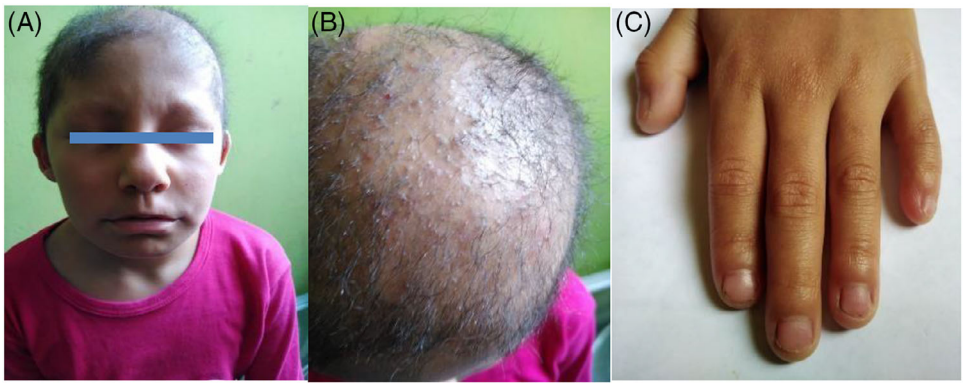


FIGURE 1 Woolly Hair syndrome: Absence of eyebrows and eyelashes (A), absence of hair length at the scalp (B), nail dystrophy in the hands (C).



FIGURE 2 Intraoral photographs.



FIGURE 3 Panoramic radiography (agenesis of pieces 34, 41y 45), odontoma at the level of pieces 36 and 37.

and the absence of radiolucidity up to the middle third in pieces 52, 61, 62 were evidenced. Thus, attrition in dental pieces was confirmed. Also, agenesis of pieces 34, 41, and 45 (Figure 3) was observed.

3.3 | Diagnostic assessment

Of general status: Patient of 5 years and 4 months with ABESG, with medical diagnosis of WHS.

Of stomatological status: In soft tissues, it was gingivitis induced by dental biofilm at the vestibular level of anterosuperior parts. In hard tissues hypomineralization, reversible pulpitis in pieces 55, 65, irreversible pulpitis in pieces 64, 75, 84, chronic apical periodontitis in pieces 54,74,85, moderate attrition in pieces 52, 51, 61, 62 grade 3 (according to Hansson and Nilner classification), agenesis of pieces 34, 41, and 45, radiopaque image compatible with odontoma at the level of pieces 36, 37, and negative behavior (Frankl scale type 2).

3.4 | Therapeutic intervention

3.4.1 | Treatment

Dental treatment was offered in five phases: educational, preventive, curative, rehabilitative, and maintenance.

In the educational phase, the mother and the girl were motivated through educational sessions, oral health promotion and evaluation of the brushing technique. It was indicated to perform oral hygiene with a toothbrush suitable for the girl's age plus fluoride toothpaste 1100 ppm three times a day.

In the preventive phase, Recaldent (MI Paste) was applied every night after night brushing for 3 months. On Sundays, it was indicated to perform tooth washing with chlorhexidine digluconate gel at 0.12% (Perio.Aid^{R}), two



FIGURE 4 Diagnostic wax and silicone guide.

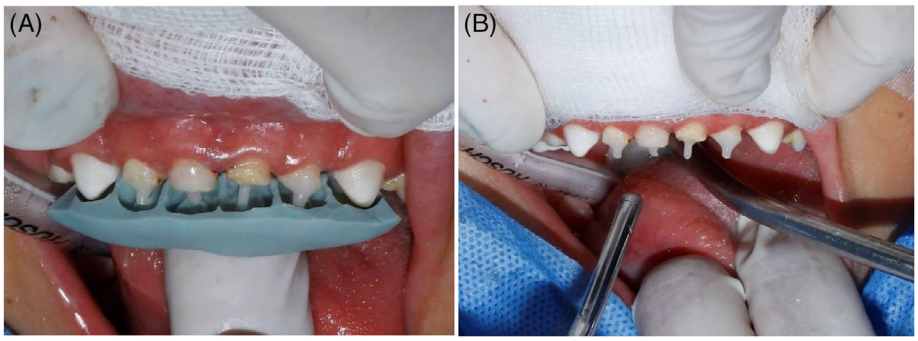


FIGURE 5 (A, B) Cementation of composite posts in pieces 52, 51, 61, 62, using a silicone palatal guide that helps us check the direction and length of the posts.

times a day, for 3 months. Later, study models were taken to plan the rehabilitation phase.

The reconstruction of the crowns was accomplished with the "Mock-up" technique, which involves a duplicate model on which a diagnostic waxing was carried out. This was similar to the objective to be achieved at the end of the treatment. Once the diagnostic waxing was completed, a matrix or key was obtained (Figure 4) by using a silicone of transparent addition (Elite Glass).

Due to the non-cooperative behavior of the patient and the complexity of the dental procedure, the curative and rehabilitative phases were performed under general anesthesia in the NICH operating room.

3.5 | Previous phase

As a protocol for dental treatment in the surgical center, pre-surgical laboratory examinations, evaluative medical appointments and suggestions for paediatrics, cardiology, and anesthesiology services were requested. As a result, a surgical risk grade II was determined.

Informed consent, from the child's parents, for a surgical procedure under general anesthesia was obtained.

The prognosis is favorable as long as the mother is involved in maintaining good oral hygiene after the surgical procedure.

3.6 | Curative and rehabilitative phase

In the operating room, under general anesthesia, the curative phase consisted of the pulpectomy of the pieces 52, 51, 61, and 62, which involves chamber opening with a round cutter no. 23, conformation with a bullet-type cutter, removal of the root pulp, irrigation, biomechanical instrumentation of root canals, washing, drying, filling with zinc-eugenol oxide cones, and application of base ionomers. Subsequently, the rehabilitative phase began with the cementation of composite posts using a silicone



FIGURE 6 Filling the silicone guide with resin, positioning, and light curing.



FIGURE 7 Removal of the silicone guide. Finishing and polishing.

palatal guide, which helps us in the verification of the direction and length of the posts (Figure 5A and B). For the reconstruction of the crowns, the silicone key "Mock-up" was used, reproducing the diagnostic wax in the patient's mouth. To do this, the dental pieces were conditioned:

- Deproteinization with 5.25% sodium hypochlorite.
- Dental etching with 37% orthophosphoric acid for 15 s.
- Washing for 10 s.
- Drying with the triple syringe for 5 s.
- Twenty-second conditioning with a universal Single Bond adhesive layer (3 M ESPE) that will work as a primer (to rub propperly).
- Airing with the triple syringe for 5 s.
- Application of a second layer of adhesive, rubbing for 20 s and airing.
- Light curing with Woodpecker LF-ILED for 20 s.
- Subsequently, Estelite Omega supra-nano-filled resin is applied to the silicone guide. The silicone guide was inserted in the corresponding area of the patient's oral cavity (Figure 6).
- Photopolymerization on vestibular, palatal, and incisal surfaces for 20 s (on each sector). The silicone guide was removed, the excess was finally cleaned and polished (Figure 7).

3.7 | Maintenance phase

Three days after the procedure, post-surgical dental control was performed. No discomfort was reported by the patient. Improved oral hygiene conditions and no halitosis were observed. During this maintenance phase, the preventive measures were reinforced: use of fluoridated toothpaste 1100 ppm fluorine and use of chlorhexidine digluconate 0.12% gel (once a week).

The mother's brushing technique was reinforced and the importance of regular checks on the stomatological health of her daughter was indicated to avoid recurrence.

3.8 | Follow-up and outcomes

The clinical evaluation of the antero-superior rehabilitation was performed with supra-nano filling resin, using the mock-up technique with transparent silicone addition Elite Glass. This procedure was performed following



FIGURE 8 Clinical control at 12 months.

the parameters established by the United States Public Health Service (USPHS),[26] where the presence of secondary caries, post-operative sensitivity, restoration failures, color matching, and gingival health[26] were evaluated. In the present clinical case, we performed clinical controls at 3 days, 3 months, and 12 months, recording absence of secondary caries in all of three controls. No restorations or crown detachment were observed in the three controls and no sensitivity in the controls. No colour change was observed in the first, second and third control (Figure 8).

Before and after the oral rehabilitation of the patient, an evaluation of the effect on the patient's quality of life was made. This evaluation was based on the parameters used in the scale of impact of oral health in early childhood (ECOHIS).[27,28] The impact was positive, with a decrease in oral symptoms and functional limitations. The psychosocial dimension was not affected. As for the impact on the family, it was positive with a decrease in the distress of the mother and less deterioration in family function.

4 | DISCUSSION

Woolly Hair Syndrome is a rare congenital abnormality of the hair. [1,2] Besides, some oral abnormalities are observed, such as agenesis and enamel defects, which include hypomineralization, atypical carious lesions, inclusions, and malformed teeth.[11]

Van Steensel et al. reported the case of a family diagnosed with WHS with short, brittle hair and premature hair loss. Other symptoms observed were: hypohidrosis and partial tooth loss due to caries. In this family, the youngest member (9 years old) had total loss of teeth and total prosthesis.[12]

Currently, available scientific literature tends to describe different types of crowns for pediatric oral rehabilitation, such as metal crowns, modified metal crowns with partial or total cover, polycarbonate crowns, zirconium crowns, and resin crowns. [26,29] The ideal restoration for temporary anterior teeth should be imperceptible,[19] precisely of the same tooth color.[19,20] It is important that it is durable, it does not need additional treatment and can adhere to the tooth prepared with a compatible material. Likewise, this should be easy and quick to apply.[18,20] Therefore, in the present case report, the mock-up technique with supra-nano filling resin was described as a conservative, low-cost and accessible alternative in a patient with WHS, in-hospital and under general anesthesia, where this clinical case was developed.

Restorative dental treatment in patients with WHS does not have standard protocols for primary dentition. However, Da Cunha Coelho et al. presented some treatment alternatives for primary dentition in patients with enamel defects and hypomineralization.[30] These could be extrapolated to patients with WHS.

Souza et al.[31] evaluated the success of composite resin restorations and reported a success rate of 68.4% when restorations were performed with a self-etching adhesive and a rate of 54.6% when performed with a total etching adhesive, evaluated at 18 months.[31] These low results are due to the hypomineralization of the affected teeth, which compromises the adhesion of the resin to the dental surface.[32,33]

Sönmez and Saat[34] restored hypomineralized teeth with a resin composite and reported that removal of all affected enamel (group I) significantly increased treatment success, compared to non-invasive techniques without the removal of all clinically defective tissue (group II).[34] These results were corroborated by William et al.,[33] who reported lower marginal adhesion of the resin compound to hypomineralized enamel in an in-vitro study. Sönmez and Saat[34] found a higher binding strength when deproteinization was performed, using 5% sodium hypochlorite.[34,35] In the present study, a protocol was carried out where hypomineralized enamel was removed, a deproteinization with 5.25% sodium was performed and a fifth-generation adhesive system was used.

The use of transparent silicone in the mock-up technique proved to have a good clinical effect, allowing the manufacture of light-curing composite crowns in patients with WHS and, above all, the use in primary teething. It should be noted that previously, it was used only in permanent teething, in adult patients without enamel defects. This type of treatment had a clinically positive effect on the quality of life of the patient, with a decrease in oral symptomatology, functional limitations, and an increase in self-esteem.

Finally, the role of the dentist in the management of this syndrome as part of the multidisciplinary team is

fundamental, mainly in the prevention, detection, and early treatment of its main harmful oral consequences. The role of the dentist is key to returning the chewing function, aesthetics, and confidence of the child with this syndrome.[18,19]

5 | CONCLUSION

The preparation of supra-nano filling resin crowns using the silicones of transparent addition (mock-up technique) is an alternative treatment for aesthetic oral rehabilitation in deciduous dentition of a patient with WHS. Showing an improvement in aesthetics, gingival health, durability, plus a notable improvement in quality of life and self-esteem (according to the application of ECOHIS). In patients with WHS who have enamel defects, we highly recommend using supra-nano filling resins to improve the aesthetic component.

CONFLICT OF INTEREST STATEMENT

The researchers declare no conflicts of interest.

ORCID

Akemy Celeste Tapia Martinez https://orcid.org/0000-0002-2585-3013
Henry Jesús Vilcapoma Guerra https://orcid.org/0000-0002-3687-2180
Lenny Lavado García https://orcid.org/0000-0002-8021-0563
Gilmer Torres Ramos https://orcid.org/0000-0002-2590-6736

REFERENCES

1. Prasad GK. Familial woolly hair. *Indian J Dermatol Venereol Leprol*. 2002;68:157.
2. Harish R, Jamwal A. Familial woolly hair disease. *Indian Pediatr*. 2010;47:450-451.
3. Trinidad M, González S. Pelo lanoso generalizado: reporte de un caso. *Rev Chil Pediatr*. 2013;84(6):667-671.
4. Mathur M, Acharya P, Karki A, Shah J. Diagnosis of woolly hair using trichoscopy. Hindawi case reports in dermatological. *Medicine*. 2019:3. Article ID 8951093.
5. Hutchinson PE, Cairns RJ, Wells RS. Woolly hair. Clinical and general aspects. *Trans St Johns Hosp Dermatol Soc*. 1974;60(2):160-177.
6. Hayashi R, Inoue A, Suga Y, Aoki J, Shimomura Y. Analysis of unique mutations in the LPAR6 gene identified in a Japanese family with autosomal recessive woolly hair/hypotrichosis: establishment of a useful assay system for LPA6. *J Dermatol Sci*. 2015;78(3):197-205.
7. Chien AJ, Valentine MC, Sybert VP. Hereditary woolly hair and keratosis pilaris. *J Am Acad Dermatol*. 2006;54:S35-39.
8. Baykan A, Olgar S, Argun M. Different clinical presentations of Naxos disease and Carvajal syndrome: case series from a single tertiary center and review of the literature. *Anatol J Cardiol*. 2015;15(5):404-408.
9. Polivka L, Bodemer C, Hadj-Rabia S. Combination of palmoplantar keratoderma and hair shaft anomalies, the warning signal of severe arrhythmogenic cardiomyopathy: a systematic review on genetic desmosomal diseases. *J Med Genet*. 2016;53(5):289-295.
10. Srinivas SM, Kumar P, Basavaraja GV. Carvajal syndrome. *Int J Trichol*. 2016;8(1):53-55.
11. Vasudevan B, Verma R, Pragasam V, Badad A. A rare case of woolly hair with unusual associations. *Indian Dermatol Online J*. 2013;4(3):222-224.
12. Van Steensel MA, Koedam MI, Swinkels OQ, Rietveld F, Steijlen PM. Woolly hair, premature loss of teeth, nail dystrophy, acral hyperkeratosis and facial abnormalities: possible new syndrome in a Dutch kindred. *Br J Dermatol*. 2001;145(1):157-161.
13. Soluk Tekkeşin M, Pehlivan S, Olgac V. and histopathological investigation of odontomas. Review of the literature and presentation of 160 cases. *J Oral Maxillofac Surg*. 2012;70:1358-1361.
14. Ahmed A, Almohanna H, Griggs J. Genetic hair disorders: a review. *Dermatol Ther*. 2019;9:421-448.
15. Rudnicka L, Rakowska A, Kerzeja M, Olszewska M. Hair shafts in trichoscopy: clues for diagnosis of hair and scalp diseases. *Dermatol Clin*. 2013;31(4):695-708.
16. Tanahashi K, Sugiura K, Takeichi T. Prevalent founder mutation c.736T[A of LIPH in autosomal recessive woolly hair of Japanese leads to variable severity of hypotrichosis in adulthood. *J Eur Acad Dermatol Venereol*. 2013;27(9):182-1184.
17. Cho S, Choi MJ, Zheng Z, Goo B, Kim D-Y, Cho SB. Clinical effects of non-ablative and ablative fractional lasers on various hair disorders: a case series of 17 patients. *J Cosmet Laser Ther*. 2013;15(2):74-79.
18. Virolés M, Mayné R, Guinot F, Bellet L. Evolución de las coronas como material de restauración en dentición temporal: revisión de la literatura. *Odontol pediátr*. 2010;18(3):185-200.
19. Aggoner WF. Restoring primary anterior teeth: updated for. *Pediatr Dent*. 2014;37:163-170.
20. MacLean JK, Champagne CE, Waggoner WF, Ditmyer MM, Casamassimo P. Clinical outcomes for primary anterior teeth treated with preveneered stainless steel crowns. *Pediatr Dent*. 2007;29(5):377-381.
21. Sa Esra, Yurdagüven Haktan. Batu Can Yaman And Füsun Özer. Surface roughness and morphology of resin composites polished with two-step polishing systems. *Dent Mater J*. 2014;33(2):1-11.
22. Perez MM, Hita-Iglesias C, Ghinea R, et al. Optical properties of supra-nano spherical filled resin composites compared to nanofilled, nano-hybrid and micro-hybrid composites. *Dent Mater J*. 2016;35(3):353-359.
23. Chen F, Toida Y, Islam R, et al. Evaluation of shade matching of a novel supra-nano filled esthetic resin composite employing structural color using simplified simulated clinical cavities. *J Esthet Restor Dent*. 2020;33(6):874-883. doi:10.1111/jerd.12671
24. Yamaguchi S, Karaer O, Lee C, Sakai T, Imazato S. Color matching ability of resin composites incorporating supra-nano spherical filler producing structural color. *Dent Mater*. 2021;37(5):e269-e275.
25. Mackenzie L, Parmar D, Shortall AC, Burke FJ. Direct anterior composites: a practical guide. *Dent Update*. 2013;40(4):297-299.

26. Chen XX, Zhong J, Yan WJ, et al. [Clinical performance of rensin-bonded composite strip crowns in primary incisors]. *Beijing Da Xue Xue Bao Yi Xue Ban*. 2020;52(5):907-912.
27. Torres-Ramos G, Blanco-Victorio D, Chávez-Sevillano M, Apaza-Ramos S, Antezana –Vargas V. Impacto de la caries de la infancia temprana en la calidad de vida relacionada a la salud bucal en niños peruanos menores de 71 meses de edad. *Odontol Sanmarquina*. 2015;18(2):87-94.
28. González E, Ugalde C, Valenzuela L, Guajado G. Aplicación de la escala de impacto en la salud oral en preescolares chilenos. *Rev Clin Periodoncia Implantol Rehabil Oral*. 2018;11(1):9-12.
29. Canales IZ. *Alternativas de restauración en dientes deciduos con tratamiento pulpar. [Tesis de pregrado]*. Universidad Peruana Cayetano Heredia; 2009.
30. da Cunha Coelho ASE, Mata PCM, Lino CA, et al. Dental hypomineralization treatment: a systematic review. *J Esthet Restor Dent*. 2019;31(1):26-39.
31. de Souza JF, Fragelli CB, Jeremias F, Paschoal MAB, Santos-Pinto L, de Cássia Loiola Cordeiro R. Rendimiento clínico de dieciocho meses de restauraciones de resina compuesta con dos sistemas adhesivos diferentes para molares afectados por hipomineralización de incisivos molares. *Clin Oral Investig*. 2017;21(5):1725-1733.
32. Fagrell TG, Dietz W, Jalevik B, Noren JG. Propiedades químicas, mecánicas y morfológicas del esmalte hipomineralizado de primeros molares permanentes. *Acta Odontol Scand*. 2010;68(4):215-222.
33. William V, Burrow MF, Palamara JE, Messer LB. Resistencia de unión a micro- cizallamiento del composite de resina a los dientes afectados por hipomineralización molar mediante 2 sistemas adhesivos. *Pediatr Dent*. 2006;28(3):233-241.
34. Sönmez H, Saat S. Una evaluación clínica de la desproteinización y diferentes diseños de cavidades sobre el rendimiento de la restauración de resina en molares afectados por MIH: resultados de dos años. *J Clin Pediatr Dent*. 2017;41(5):336-342.
35. Gandhi S, Crawford P, Shellis P. The use of a "bleach-etch-seal" deproteinization technique on MIH affected enamel. *Int J Paediatr Dent*. 2012;22(6):427-434.

How to cite this article: Conto Quispe PN, Tapia Martinez AC, Vilcapoma Guerra HJ, Lavado García L, Torres Ramos G. Aesthetic oral rehabilitation of the upper-anterior sector with supra-nano filling resin in a patient with woolly hair syndrome: case report. *Spec Care Dentist*. 2024;1-9. https://doi.org/10.1111/scd.12979