

# A Case of Congenital Giant Nevus with Generalized Small Congenital Nevus Treated with Facial Laser

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**Abstract:** The patient was a 16-year-old male with black spots on the trunk, extremities and face for 16 years. Dermatologic examination: a large number of black macules ranging from corn to green bean in size, scattered on the face and neck; a whole black macule on the trunk with an area of more than 1,000 cm<sup>2</sup>, which is rare, with a markedly thickened surface, papillae and folds; a black macule of soybean to bean size on the extremities. Diagnosis: congenital giant nevus with pancystic congenital nevus. Combined with the combination of factors in this patient, laser treatment of her facial lesions was considered with good results.

## 1 INTRODUCTION

Congenital melanocytic nevi are defined as congenital pigmented nevi >20 cm in diameter in adulthood, and according to the Ruiz-Maldonado (Ruiz-Maldonado, 2004) classification, congenital melanocytic nevi (CMN) >20 cm in diameter are referred to as GCMN, which are subdivided into three categories, with G1 measuring 21-30 cm in diameter, G2 measuring 31-40 cm in diameter and G3 measuring >40 cm in diameter. If there are more than 50 satellite foci, the classification is increased by one level from the above. Congenital macromegaly is a relatively rare skin tumour with an incidence of approximately 1 in 20,000 (Vourc'h-Jourdain, 2013) but has a certain risk of malignancy and significant cosmetic abnormalities. The disease often affects the appearance of the skin and places a huge psychological and psychiatric burden on patients and their families. The disease is currently treated surgically with various surgical procedures including free skin grafts, fractionated excision, direct excision + flap transfer repair, and skin soft tissue expansion (Saida, 2006; Ibrahim, 2012; Nacarelli, 2014; Zhan, 2016). Some studies have also used ultra-pulsed CO<sub>2</sub> fractional laser to treat giant nevi (Fu, 2019), but some of them showed scarring. Eggen et al. found that exfoliative lasers were most commonly used in giant or large nevi, but were prone to scarring. Q-switched lasers combined with CO<sub>2</sub> lasers showed low incidence of

hyperpigmentation and scarring and good cosmetic improvement (Eggen, 2018). Funayama et al. treated children with a combination of PDL fuel laser + Q-switched laser, which showed a significant reduction in the number of melanocytes and in the incidence of scarring compared to post-excisional skin implants (Funayama, 2012). In the present case, the facial lesions were treated with a sequential treatment of multiple lasers of CO<sub>2</sub> laser, 585 dye laser and CO<sub>2</sub> fractional laser with remarkable efficacy as reported below.

## 2 MEDICAL RECORD INFORMATION

The patient is a 16-year-old male who presented to our department with a 16-year history of black spots on the trunk, extremities and face. The patient had no apparent cause for the gradual appearance of black spots on the face, trunk and extremities, which increased over the years and have since spread all over the body. On the face and neck, a large number of black spots ranging in size from corn to green beans were seen in a scattered pattern; on the trunk, a whole black rash, >40 cm in diameter, with a markedly thickened surface, papillae and folds; on the extremities, a black rash the size of a soybean to a bean was seen. The rash is not seasonal or sunlight dependent, and there is no family history of similar disease. Growth and mental development are normal.

Physical examination: good general condition, normal development, responsive, clear, cooperative, no trauma or deformity of the skull, normal eye distance, normal eye shape, no yellowing or spotting of the sclera bilaterally, normal hearing in both ears, clear respiratory sounds, no murmur in the auscultation area of the heart valves, no subcostal palpation of the liver and spleen, no abnormality of

the external genitalia or anus, no deformity of the spine of the limbs, no pathological reflexes elicited, no abnormality of other systems. No other systemic abnormalities were noted. The clinical diagnosis is: congenital macro nevus with generalized congenital micro nevus. The patient requested laser treatment of the facial lesions and was advised of the possibility of malignant transformation.



Figure 1: Clinical photographs 1A: preoperative face; 1B: abdomen; 1C: back; 1D: lower leg; 1E: arm.

### 3 LASER TREATMENT

The patient requested laser treatment for facial lesions, and the first treatment was with a carbon dioxide laser (Chongqing Jinyu), wavelength 10600nm, treatment parameters: energy 15mJ, frequency 15HZ, pulse width 2ms. 2% lidocaine local infiltration anesthesia for 1 hour before the start of treatment, after cleaning, the lesions were first disinfected with 75% alcohol, then 0.9% saline wiped, the laser continuously and evenly swept the lesions. The lesion is then repeatedly scrubbed with a 0.9% saline swab to remove the carbonised tissue, then continuous sweeping plus wiping, followed by intermittent firing pattern plus repeated wiping when there is less melanin, until the black tissue is invisible to the naked eye. The patient is instructed not to touch the lesions with water for 10-15 days and not to scratch the lesions, the scabs are left to peel off on their own and the combination of

recombinant bovine basic epidermal growth factor gel is applied topically once daily after surgery. The second treatment was performed with a 585 dye laser (cynosure, USA) to treat scattered erythema and scarring on the face with the following parameters. The second treatment was performed with a 585 dye laser (cynosure, USA) with the following parameters: PDL 7.5 J/cm<sup>2</sup>, pulse width 0.5 ms, spot 7 mm. 1 month after the second treatment, the third treatment was performed. The third treatment was performed with a CO<sub>2</sub> fractional laser (Wuhan Hi-Tech Hengda) on the scar, treatment parameters: scanning area 7mm×7mm, fractional energy 39mJ. Postoperative combination with recombinant bovine basic fibroblast growth factor gel was applied topically once daily. After the 3rd treatment the facial lesions were significantly improved and the patient was very satisfied with the results, and the patient did not undergo further laser treatment at a later stage. See Figure 2.



Figure 2: 2A: preoperative face; 2B: after 1st treatment with CO<sub>2</sub> laser; 2C: after 2nd treatment with 585 dye laser; 2D: after 3rd treatment with CO<sub>2</sub> fractional laser.

## 4 DISCUSSION

Surgery is currently the main treatment for congenital nevus, including free skin grafting, fractional excision, direct excision + flap transfer repair, and soft tissue expansion (Saida, 2006; Ibrahimi, 2012; Nacarelli, 2014; Zhan, 2016). However, in this case, the lesion was particularly large, with a diameter of 80 cm and an area of more than 1,000 cm<sup>2</sup>, which was already in the G4 class, so neither flap grafting nor fractionated excision was appropriate, and the site of the giant nevus was located at the trunk, so there was little therapeutic significance and no treatment was done for the time being. Although the treatment of congenital giant nevus panchromatic congenital nevus is not particularly satisfactory, it is often accompanied by a heavy psychological burden and a severe lack of self-confidence if the patient has severe skin lesions in exposed areas, especially on the face (Wan, 2020). Therefore, the facial lesions of the disease have some therapeutic implications. Treatment options vary from patient to patient, taking into account cosmetic, psychosocial and functional factors (Li, 2020). In some cases, the facial lesions are large flaps, and significant results have been reported with flap plasty and skin expansion (Ye, 2014; Zhang, 2017). The treatment of congenital nevi should be individualized and comprehensive, taking into account the patient's age, the location and size of the lesion, the presence of a large number of small nevi around the nevus, the risk of secondary melanoma, the expected outcome of the surgery, the postoperative complications and psychological guidance. Long-term follow-up is also required to prevent recurrence and malignancy.

In this case, the facial lesions were heavily granular, so laser treatment was considered, starting

with carbon dioxide laser treatment, but the melanin was deep and it was difficult to avoid superficial scar formation after carbon dioxide laser treatment (Zhu, 2016), so sequential treatment of the later scar was very important. There are various scar treatment modalities, and dye laser and fractional laser have some synergistic effects in the treatment of scarring, especially in the inflammatory scarring phase where PDL with dye laser is very effective (R. Rox Anderson, 2014). 585 dye laser is used early after the scab has fallen off to reduce the late scar shape, and further CO<sub>2</sub> fractional laser is used later to improve the scar and promote healing (Tan, 2017). Further repair after laser surgery combined with recombinant bovine basic fibroblast growth factor gel has been effective in preventing and improving scarring (Zhang, 2021).

## 5 CONCLUSION

In summary, although there have been many reports of congenital macromegaly, it is still rare to find a macromegaly with severe lesions at the G4 level, and even rarer to have a generalized nevus. Laser treatment of the large number of scattered lesions on the face has also been less frequently reported. In order to increase the patient's self-confidence and improve the quality of life, treatment of congenital giant nevus with congenital small nevi is necessary.

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