

Bindi Tattoo on Forehead: Success with Modified R-20 Technique Using Low Fluence Q-Switched Nd Yag Laser: A Case Report

Bindi tattoo on the forehead, is one of the cultural practice in Indian women from rural areas. Many patients are not pleased with the appearance of their tattoo and thus seek removal. The development of quality-switched lasers has revolutionized the removal of unwanted tattoos. However, despite multiple treatment sessions, the efficacy is often found to be limited. We herein report a case of green-blue bindi tattoo which failed to clear after 8 sessions of Q-switched Nd YAG laser. The tattoo significantly cleared with R-20 method using low fluence Q-switched Nd YAG Laser. R-20 technique seems to be an effective method of tattoo removal and might be a boon for patients who are reluctant to pursue laser treatment because of fear of expenditure, side effects and uncertainty of result. We report efficacy of R-20 technique for a bindi tattoo on forehead.

KEYWORDS: Tattoo, Q-switched Nd-YAG Laser, R 20 technique

INTRODUCTION

Bindi tattoo on the forehead is a common cultural practice in young Indian women. Many patients seek its removal later in life. The development of quality-switched lasers has revolutionised removal of unwanted tattoos.^[1-3]

CASE REPORT

A 26-year-old female consulted us for removal of a green-blue bindi tattoo done on her forehead in childhood as a family ritual. After counselling, we treated her with a low-fluence Q-switched Nd YAG Laser (LFQSNYL), a machine recommended for tattoo removal. We used 1064 mode with the parameters 450 mj, every 4 weeks, spot size of 1.5 mm, pulse width 6 ns and repetition rate of 2 Hz on all the sittings. However, after eight sessions of LFQSNYL, there was no appreciable improvement [Figure 1]. We and the patient were disappointed. As

the patient was committed, we decided to try a new R20 technique, that is repetition after 20 minutes in the same sitting. We were not sure about the results and side effects such as scarring and dyspigmentation. We administered only one additional treatment after 20 minutes, using the same parameters as earlier [Figure 2]. There was transient oedema, erythema and punctuate bleeding, which was symptomatically managed. She attended follow up after 4 months having received no treatment in the meantime. We were pleasantly surprised to see significant shrinkage of the size and lightening of her tattoo with only a single session of R-20 modality [Figure 3].

DISCUSSION

Q-switched lasers emit short, high-intensity pulses, which cause thermo-mechanical destruction via photoacoustic waves leading to fragmentation of tattoo ink. Eventual phagocytosis results into gradual clearance. However, the treatment course is often prolonged and expensive as it involves multiple sittings and results are often unpredictable. This may cause patient dissatisfaction. The task of laser tattoo removal often frustrates patients and challenges clinicians.^[2-4]

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Figure 1: (a) green-blue bindi tattoo on the forehead. No appreciable improvement after eight sittings with conventional QS NdYag laser



Figure 2: R-20 technique being administered to the same patient



Figure 3: Significant reduction in pigment following 1 session of modified R-20 technique

A study by Kossida *et al.* on Greek population showed that multiple passes of Q-switched laser treatment given about 20 minutes apart (hence the term, R-20 method) are far more effective than conventional Q-switched for tattoo removal. They used a Q-switched alexandrite laser (5.5 J/cm², 755 nm, 100-nanosecond pulse duration, 3-mm spot size).^[5]

The exact mechanism of efficacy of this method is unknown. The authors hypothesise that with a stronger interaction of lasers energy with tattoo ink in deep dermis, there is immediate whitening due to gas bubble formation, which apparently limits penetration of laser light into the deeper dermis, which limits optical penetration. After 20 minutes, the dermal gas bubbles dissolve as whitening fades. Administration of subsequent pulse can penetrate further with each pass treating successively the deeper layers of dermis.^[5]

In our patient, this modification showed not only the improved efficacy but also showed no long-term side effects.

CONCLUSION

This technique may be worth trying, especially when the conventional QS ND Yag laser treatment of tattoo fails in effective tattoo removal. This could be time-saving and economical. We speculate that bindi tattoo in our patient may not have responded for eight sittings possibly due to very low fluence of the machine or the green-blue tattoo ink may not have been effectively treated by LFQSNYL in our patient. Larger, multi-centric studies will be required to establish the efficacy, superiority and safety of this technique. To our best knowledge, this is the first report of using LFQSNYL by R-20 method for tattoo removal in Indian literature.

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