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Mac Gregor's flap on replanted hand (case report)

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Abstract

The groin flap or Mac Gregor flap has revolutionized the treatment of loss of skin substances in the hand. It is reliable and very advantageous for large losses of substances. We are reporting an observation of a young 27 year old who presented following an assault by a knife amputating transcarpien of the left hand. An emergency replantation was performed with a waiting period of one hour (crowned time) with revascularization of his hand. The secondary occurrence of dorsal skin necrosis of the hand with a preserved digital vascularization, required the use of a rescue cover flap type Mac Gregor with a good evolution.

The interest of this observation is twofold; successful replantation within six hours and the possibility of covering of lost skin substance with inguinal covering flaps even on a replanted hand.

Keywords: Mac Gregor flap, replanted hand

Introduction

MH patient 27-year old cannabis users, unemployed, has been admitted in the emergency of CHU Ibn Rochd for transcarpien amputation of the left hand (Fig 1 a,b) resulting from a stabbing attack, the patient presented to the emergency department at CHU at H1 where he was immediately admitted in the primary intensive care unit.

Firstly the patient was stabilized by bleeding controlling and biological assessment, then he was operated directly under general anesthesia. The upper left limb was installed on a lateral table, the first step was decontamination and preparation of the amputated hand by the team, with an identification of the vasculo-nervous elements and the tendon elements.

In the second step, a preparation of the stump and the fixation of the amputated hand by a radio-carpal pinout. After this step; the repair of radial and ulnar arteries and three veins dorsalveins were repaired with restoration of a good flow passage and normal finger refilling time.

Next, repair of the median nerves, ulna and the sensory radial branch. Finally, the repair of the flexor tendons (figure 2).

In coordination with the surgical resuscitation team, we applied a protocol focused on thromboprophylaxis, broad spectrum antibiotics, vasodilators, external heating measures, a blood pressure target set at a systolic at 120mmHg, with twice daily dressing.

The evolution was marked by the beginning of compartment syndrome of the hand was treated by releasing the incisions (Fig2)

At the 12th day, necrosis of the skin in the dorsum of the hand extending up to the hypothenar area (Fig4), necrosectomy of the entire dorsum of the hand was practiced leaving a skin defect back.

The 17th day, the patient was taken back for coverage of the defect by flap of MacGregor. In supine position, under anesthesia general, a block was placed under the buttock on the side of the sample so as to release the iliac crest wall. The operating field including both the left upper limb, the inguinal region and the ipsilateral iliac. The flap was drawn before sterile installation of the operating field. The following classic landmarks: the anterosuperior iliac spine (ASIS); the pubic spine; the crural arch (line joining the ASIS to the pubic spine); the femoral artery. The superficial iliac circumflex artery (SICA), arises from the femoral artery 2 to 3cm under the crural arch. Its route follows a line joining ASIS (fig 3).

We proceeded to lift the flap whose surfaces superior and bottom are equidistant from the ridge. With tubularization of the flap at its base to prevent maceration phenomena and give the hand a comfortable position allowing rehabilitation of the hand in the nursing phase. Then to the graft of the postero-internal face of the amputated hand (fig 3-6).

Weaning is carried out moderately on the 21st day, after the systematic 10-minute clamping test.

The evolution was marked by the holding of the graft and the good closure of the scar from the harvest (fig 7).

Discussion

The replantation of the hand is a surgical emergency requiring high technical expertise with a trained and technically qualified person. The success of any replantation depends essentially on time of management, the quality of operative sutures and essentially the quality of taking in charge and reanimation post-operative [2].

Early complications are usually related to a collapsed microvascular or infection, depending on the degree of contamination, and venous infarction [3]. Only the inguinal flap of Mac Gregor makes it possible to obtain a large self-closing flap [4].

The inguinal flap is an axial flap pedicled. It is a very reliable flap for covering large loss of substance in the upper limb, even if its major drawback is the need for 2 operations. It was described by McGregor in 1972 inspired the flap delto-pectoral centered on an axis vascular arterio-venous. It finds its place in the coverage of loss of substance on the dorsal surface of the hand exceeding 20cm² [5].

Flap necrosis is a rare complication, not exceeding 14% of cases and often in the distal area. It would be related to a

bad posture of the flap by folding of the pedicle, or in the case of extreme flaps (average surface of 200 cm²). The low rate of necrosis of this flap confirms its reliability and ease of execution [6].

Mac Gregor's flap retains multiple advantages ; easily and quickly removed, makes it the solution of choice for covering skin tissue loss from the hand [7].

It remains a current reconstruction procedure provided, however, that a rigorous technique is observed, making it possible to obtain a long tube flap that moves the hand away from the abdominal plane and allows for early rehabilitation [8].

Conclusion

Hand replantation is a surgical procedure requiring high technical expertise with an adequate technical platform and qualified personnel.

Early complications are usually related to a collapse microvascular or infection, depending on the degree of contamination, stall and tissue quality of the wound, and the 'infarction venous with skin defect. Faced with this complication; Only the inguinal flap of Mac Gregor makes it possible to obtain a large self- closing flap.

The Mac Gregor inguinal flap is a pedicled "axial" flap very effective for covering large loss of substance in the hand, it is an interesting and reliable covering solution even in the even of a replanted hand.



Fig. 1: a, b amputation transcarpian of the left hand



Fig 2: dorsum necrosis at the 12th day



Fig 3: Mac Gregor's flap incision



Fig 4 : Mac Gregor's flap removed



Fig 5: Mac Gregor's flap covering loss of substance



Fig 6: evolution after 6 months

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