

BUTTONHOLE CANNULATION TECHNIQUE: PROS AND CONS

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INTRODUCTION

Buttonhole (BH) cannulation technique for hemodialysis arteriovenous fistulae (AVF), despite having a long history, has only enjoyed relative popularity.

At our dialysis Center this method of needling has been in use since 2009 and currently accounts for about 35% patients on hemodialysis. This choice has led us to draw up an operational procedure and a supervision board for the reporting of adverse events.

CASES AND METHODS

In the first phase of our study (2009-2012), an increasing percentage of patients was involved, from 10% to 37% of hemodialysis patients, the disinfectant was Amuchina 10%, there were no major limitations on patient selection. The second phase of our study (2013-2014) concerned 35-40% of hemodialysis patients. After internal auditing, certain changes have been made to the procedure: the definition of exclusion criteria for eligible patients (particularly immunocompromised patients, patients with prosthetic structures, subcutaneous tissue poorly represented), a different skin disinfectant for skin (Chlorhexidine 0.5% instead of Amuchina 10%). In both phases the parameters evaluated were: effective blood flow (QB), bleeding time, infection rate, incidence of interventional procedures for malfunction or failure of the arteriovenous fistulae (AVF).

RESULTS

In both phases of our study we noted good QB, a low bleeding time, no aneurysm formation, a substantially limited percentage of interventional procedures for failure or thrombosis of AVF thrombosis. We recorded between the first to the second phase of our study a reduction in the rate of infection related to the vascular access dropped from 0.19/1000 days AVF to 0.13/1000 days AVF.

Auditing and consequent amendments, selection of the patients and choice of skin disinfectant, were determined by the type of germs isolated, essentially Gram +, and the type of patients affected by inflammatory episodes, particularly immunocompromised patients.

CONCLUSIONS

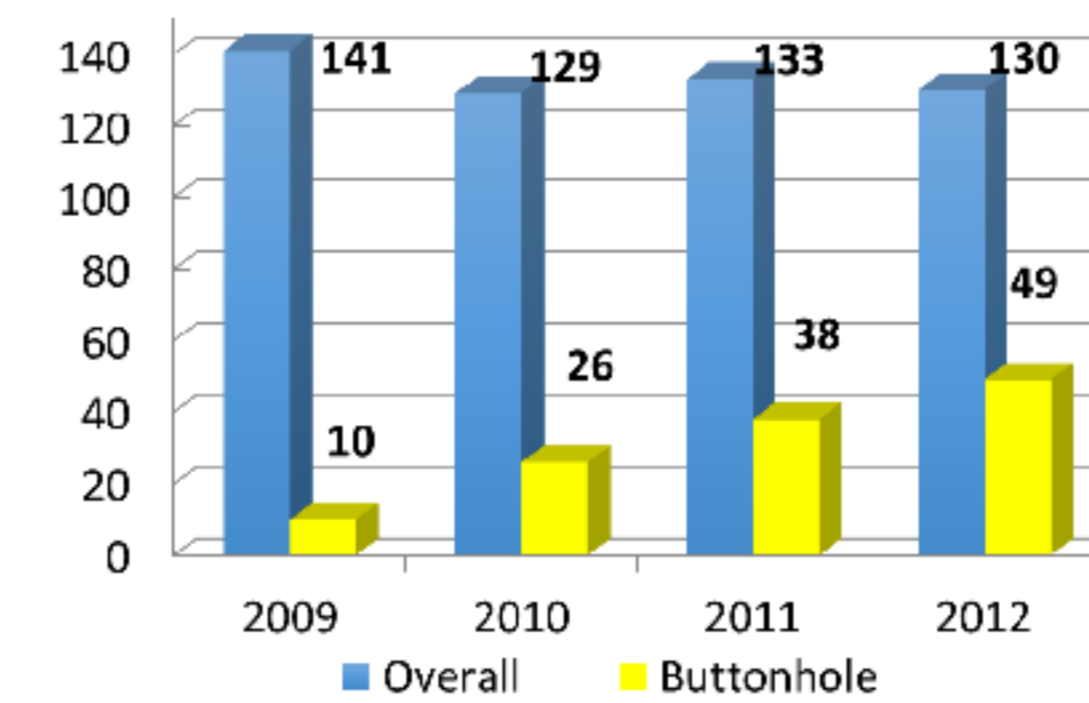
The BH cannulation would seem to have certain advantages that differentiate it from other methods of needling: no morphological alterations of the blood vessels (aneurysms), low bleeding time, reduction in pain, likely better long-term patency, even if the latter figure has to be confirmed by further studies. However, the significant incidence of both local and systemic infections reported in the literature demand prudence and in our opinion the need to focus on three key aspects:

- training and motivating staff
- patient selection
- careful surveillance

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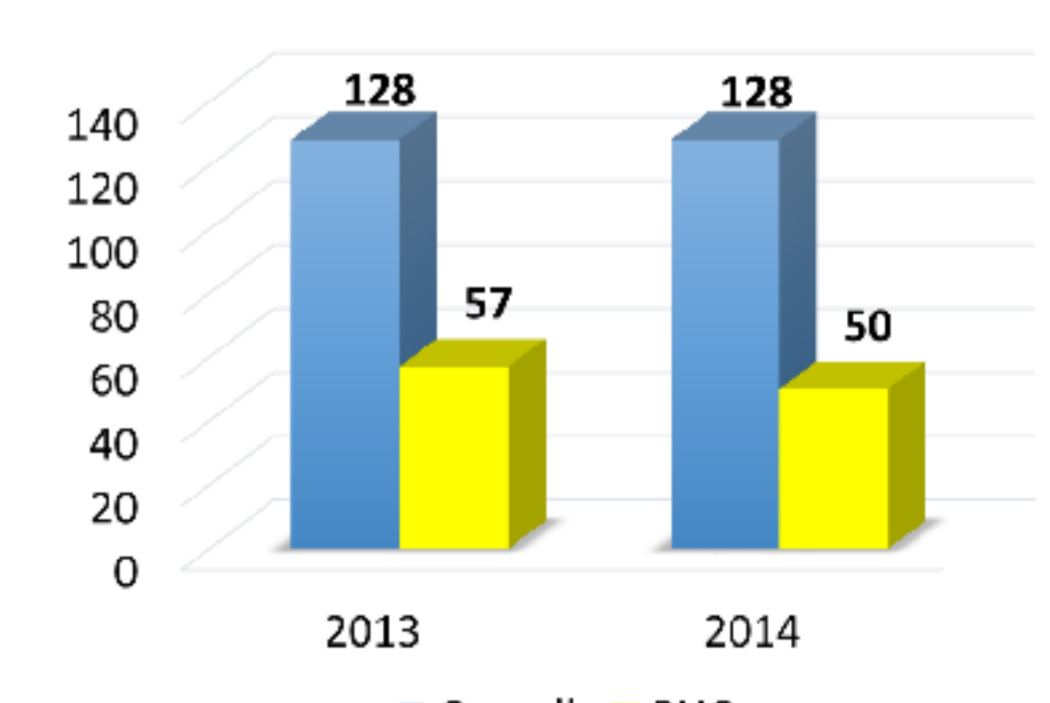
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I phase



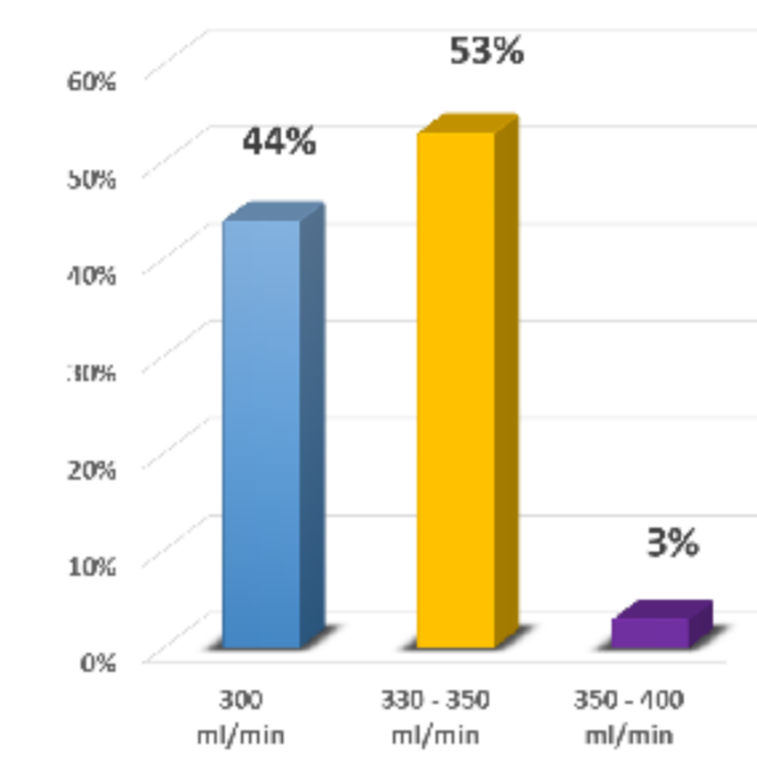
BH
2009: 10 pts (7%)
2012: 49 pts (37.6%)

II phase From March 2013 to July 2014

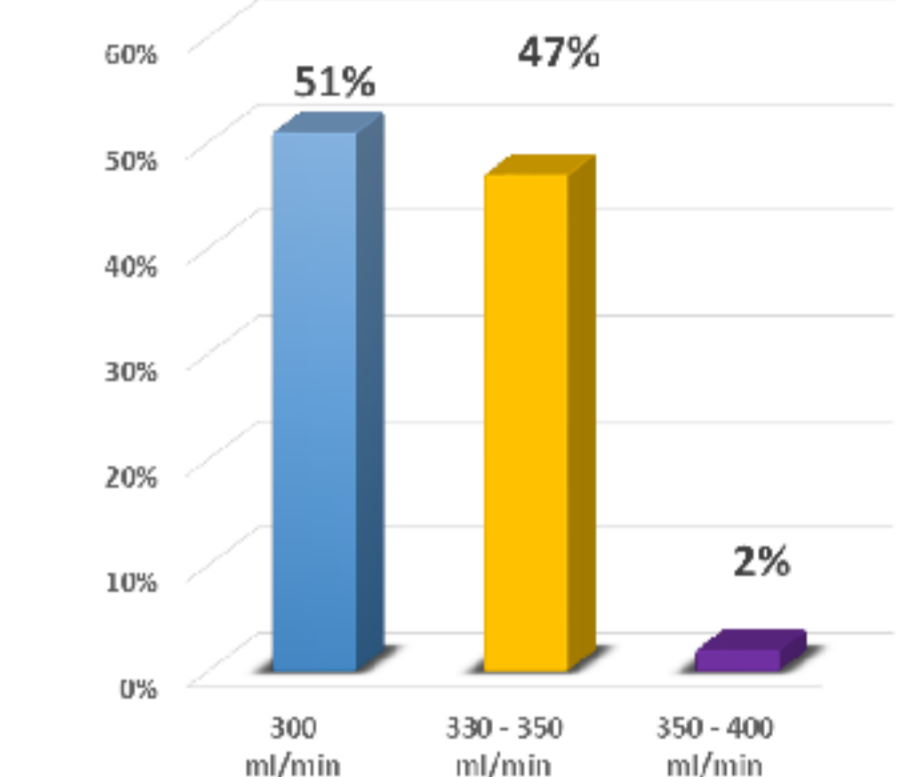


BH
2013: 57 pts (44.5%)
2014: 50 pts (39%)

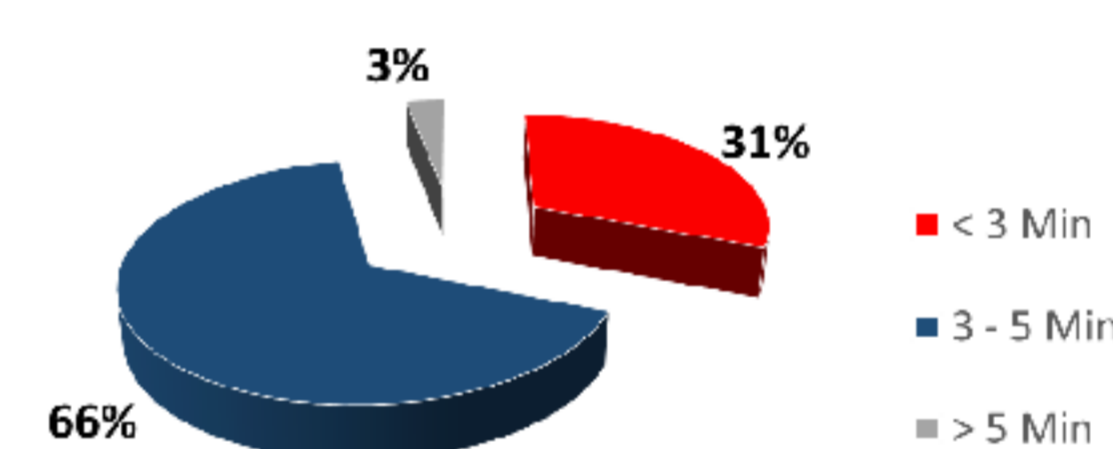
Effective QB



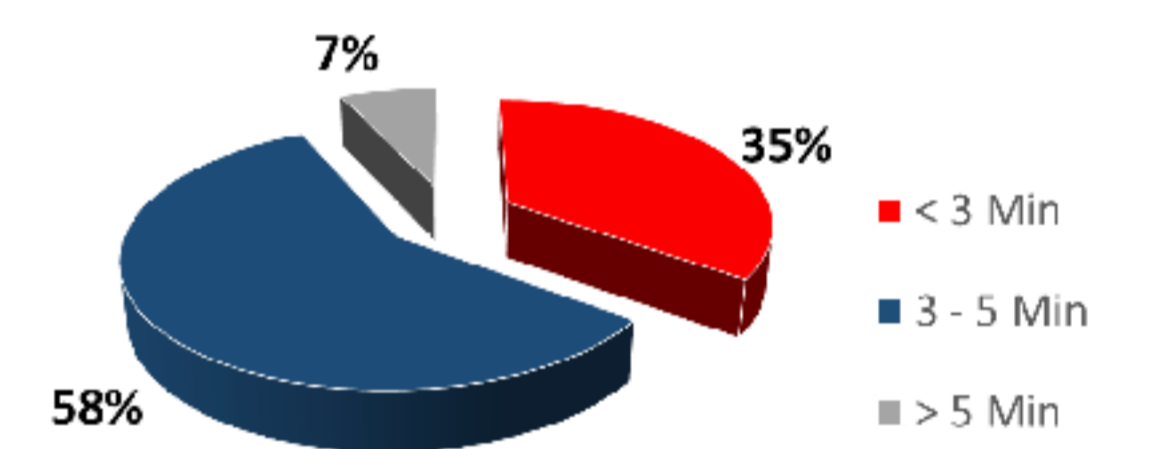
Effective QB



Bleeding Time



Bleeding Time



Infectious events

Follow up for 36.697 days AVF
Infection number: 7 in 5 patients
Overall infection rate: 0,19/1000 days AVF
Isolated bacteria: 2 MSSA (Methicillin Susceptible Staphylococcus Aureus) treated with targeted antibiotic therapy
5 with local inflammation treated with local antiseptic (mupirocina)

2013 (10 months): Follow up for 14.427 days AVF
Infection number: 2
Overall infection rate: 0,14/1000 days AVF
Isolated bacteria: Streptococcus Bovis (Gram +) and Myroides species (Gram -).
2014 (7 months): Follow up 7.543 days AVF
Infection number: 1
Overall infection rate: 0,13/1000 days AVF
Isolated bacteria: Staphylococcus Aureus

Surgical procedures

2 thrombosis with AVF failure (3,13%)
2 stenosis treated with percutaneous angioplasty and endovascular metallic stents
No aneurysms

Surgical procedures

2013: 3 thrombosis with AVF failure .
2014: 2 stenosis treated with percutaneous angioplasty and surgical reintervention
No aneurysms

