equalize the pressure over the entire surface of the clip.

We have applied this technique for 2 years now in 48 patients to correct P2 prolapse, bileaflet prolapse, and even Barlow disease.

In the case of endocarditis, we prefer to use resective techniques rather than the one described here (Figure 1-3).

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Reference

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doi:10.1016/j.jtcvs.2007.01.032

Intraoperative ablation of atrial fibrillation using bipolar output of surgical radiofrequency generator (diathermy) and reusable bipolar forceps

To the Editor:

My colleagues and I began using bipolar radiofrequency (RF) ablation in August 1996 and published the first clinical study in the *European Journal of Cardiothoracic Surgery*.¹ We used the standard bayonet-shaped bipolar forceps with a 7-mm tip to draw ablation lines, which replaced most of the incisions of the Cox maze III procedure. The larger experience with this technique was published in *Heart, Lung and Circulation*.²

A number of bipolar RF ablation devices have been used experimentally and clinically. The results of these studies have been published in this *Journal*. One such study is that by Gaynor and associates.³ They tried to do exactly what we described in our publication in an indexed journal. Similarly, Gillinov and coworkers⁴ have used bipolar RF with different lesion sets. In addition, our letter to Editor⁵ clearly defines the advantage of bipolar RF over unipolar RF in avoiding collateral damage. In the abstract to the article by Benussi and associates,⁶ the "Objective" section states, "Bipolar radiofrequency proved highly effective in the animal model, but clinical experience is still initial."

I am at a loss to understand the reasons for the omission, in this Internet era, of reference to our original work published much earlier. I am absolutely sure that this omission was not intentional, yet I am led to believe it is a scientific lapse.

Therefore, I believe it would be appropriate to bring to the notice of the readers that intraoperative ablation of atrial fibrillation with bipolar RF is possible with a good success rate without additional costs of special RF equipment and disposable bipolar clamps. The technique is described in detail in reference 2. It is the purpose of this letter to highlight the fact that the standard RF generator with bipolar output can be used with the bayonet-shaped bipolar forceps to effect ablation lines on the atria and achieve a success similar to that of modified maze procedures. Our ongoing work, begun 10 years ago emphasizes that our approach is highly successful, simple, and eminently cost-effective.

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doi:10.1016/j.jtcvs.2006.11.073

Reply to the Editor:

Dr Patwardhan complains that two seminal papers describing his pioneering experience in surgical ablation with bipolar coagulation^{1,2} were not given due consideration in articles published by us³ and by others.

We recognize that Patwardhan's intuitions opened the way to the modern scenario of surgical ablation. Nevertheless, only 2 of 74 articles among PubMed-listed clinical papers focusing on atrial fibrillation (AF) ablation with bipolar radiofrequency (RF) (by matching AF with bipolar RF) quote Patwardhan's works.

There are different possible reasons for this reiterated omission:

First of all, Patwardhan and colleagues reported using a standard electrocautery in the bipolar mode to ablate the atrial myocardium. This is not perceived by us (and probably by most surgeons) as being in accordance with some fundamental safety issues: Power-based RF can lead to charring and to excessive endocardial trauma, potentially leading to an increased risk of thromboembolism. Furthermore, also due to the absence of any feedback controlling energy delivery, electrocoagulation can cause excessive tissue weakening, possibly leading to bleeding. Re-exploration for bleeding occurred in 20% of survivors in Patwardhan's initial series.¹ Temperature and impedance feedback, featured by commercially available bipolar devices, are actually meant to address such problems.

It is then not irrelevant that bipolar electrocautery, despite sharing the same physical principles of commercially available RF ablation devices, is not CE- or Food and Drug Administration-marked for cardiac ablation. As a result, most surgeons, including our group, would rather avoid the "off-label" use of a bipolar electrocautery and indulge in the use of more recognized commercially available alternatives.

Furthermore, Patwardhan's spot-by-spot ablation without tissue feedback can admittedly lead to the creation of incomplete ablation lines, rendering the ablation procedure not reproducible and clinical result possibly suboptimal.

It is finally worth mentioning that Patwardhan's electrocautery ablation is an open-heart procedure. Electrocautery forceps, in fact, despite being bipolar, do not share the epicardial clamping feature that