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## DIGEST

A PRODUCT, NEWS AND CLINICAL UPDATE FOR THE ELECTROPHYSIOLOGY PROFESSIONAL

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## Adopting a Strategy of Early Ambulation and Same-Day Discharge for Atrial Fibrillation Ablation Cases

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The atrial fibrillation ablation procedure has become the most commonly performed EP procedure at our institution. The procedure is increasingly common for the management of paroxysmal atrial fibrillation and persistent atrial fibrillation, as well as post-ablation atrial tachycardia and flutter. For the purpose of this article, these are all included in “atrial fibrillation ablation”. Due to the increased volume of these cases, an increase occurs in utilization of hospital resources such as inpatient beds, nursing staff, pain meds, etc. For the past several years, we have adopted a strategy of same-day discharge for some EP procedures. Patients undergoing new implants of a pacemaker, defibrillator, or CRT device are generally discharged home after 3–6 hours, and generator changes after 1–2 hours. Patients undergoing SVT ablation and right atrial flutter ablation are discharged after 4–6 hours



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as well. Approximately 60–65% of all device implants in the past year were successfully discharged on the same

day at our facility. We have traditionally kept patients overnight who undergo a transseptal puncture, an 8 French

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# Adopting a Strategy of Early Ambulation and Same-Day Discharge for Atrial Fibrillation Ablation Cases

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(Fr) arterial puncture, and those with multiple comorbidities. Recently, we have moved towards a strategy of same-day discharge for AF ablation patients. In this article, we discuss the aspects to successful same-day discharge for AF ablation patients.

Managing vascular access sites is a critical part of early ambulation and discharge. Our approach to vascular access has evolved significantly, driven by an effort to improve safety and efficiency. We have eliminated arterial access in most AF cases. All venous punctures are guided by vascular ultrasound. Access sites are limited to single site (usually right femoral), and 2-3 venous sheaths are introduced separated by approximately 1 cm in a cranial-caudal direction (Figure 3) Specifically, two 8.5 Fr SL1 sheaths and a short 8.5 Fr sheath are used to introduce an intracardiac ultrasound (ICE) catheter (CARTO SOUNDSTAR or ACUNAV Catheter, Biosense Webster, Inc., a Johnson & Johnson company). After transseptal access is achieved, we remove the ICE catheter and introduce a duodecapolar catheter through the same sheath, and position it into the coronary sinus with proximal electrodes around the tricuspid annulus. Additionally, one or two SL1 sheaths are placed for transseptal access, depending on user preference. These are used for introducing the ablation catheter (THERMOCOOL SMARTTOUCH SF Catheter, Biosense Webster, Inc., a Johnson & Johnson company) and mapping catheter (LASSO or PENTARAY Catheter, Biosense Webster, Inc., a Johnson &



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Johnson company). We perform either a single or double transseptal access for pulmonary vein isolation (PVI). Blood pressure is monitored non-invasively every 3 minutes, and end-tidal CO<sub>2</sub> monitoring is performed continuously. Minimizing the number of punctures is helpful in reducing bleeding complications, as well as limiting the cost of vascular closure devices (VCD) used at the end of the case. We reintroduce the ICE catheter before concluding the case and examine for pericardial effusion. Two to three VCDs (Perclose ProGlide Suture-Mediated Closure System, Abbott Vascular) are used to

allow immediate sheath removal in the EP lab prior to transfer to the PACU (Figure 4). Protamine is also administered in the EP lab; although with use of a VCD, this is optional. All patients are given 1% lidocaine or 0.5% bupivacaine in the access site. A two-hour bed rest is advised at an angle of 60 degrees (up immediately), with an additional two- to three-hour observation period before discharge home. In managing the vascular access in this manner, we have been able to reduce the risk of post-op bleeding, the need for additional pressure to achieve hemostasis with or without use of the

FemoStop device (Abbott Vascular), and almost eliminate the incidence of severe vascular complications such as hematoma, pseudoaneurysm formation, and retroperitoneal hemorrhage.

Foley catheter placement has been eliminated in most patients. The majority of the cases last between one to three hours, and patients are encouraged to void immediately before they are taken to the EP lab. We hope this will reduce the incidence of Foley-related complications such as UTI. It is important to monitor the time in the left atrium, as longer procedures result in more fluid infusion through the irrigated ablation catheter tip.

We use high-frequency ventilation (>25 respirations per minute with a tidal volume 200-250 ml). This has significantly improved the efficiency of the procedure due to increased catheter stability and effectiveness of lesions. Titrating lesions to achieve maximum efficacy is important. We also use CARTO VISITAG Module (Biosense Webster, Inc., a Johnson & Johnson company) settings (Max distance change 2-3 mm, Stability min time 3-5 sec, FOT 25%, Min Force 3 g) to allow for efficient and durable PVI. As changes in catheter or lesion settings (VISITAG) are adopted, the incidence of post-procedure chest pain and pericarditis should be monitored.

We carefully select patients who are eligible for same-day discharge. Usually these patients are younger and indicate a preference to be discharged. Patients who live more than 30 minutes away are kept for overnight observation.

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**Figure 1:** Front row, left to right: Elizabeth Kurzawa, RN; Gretchen Thomas, RCES; Candace Williams, RT(R), RCIS; Jeanette Duncan, RN; Miranda Dishon, RCES; Susan Silver, CRNA; Erin Gaudett, MA. Back row (L to R): Evan Giedrimas, MD; Dennis Langford, RT(R), RCES; Jarrod Bauldree, RCES; Thabet Alsheikh, MD, FACC, FHRS; Bill Huson, RN, RCES, CEPS; Michael Drlicka, RN, RCES; Sumit Verma, MD, FACC.



**Figure 2:** Baptist Heart & Vascular Institute at Baptist Hospital in Pensacola, Florida.



## Early Ambulation

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Similarly, elderly or frail patients, those with multiple comorbidities, and those undergoing extensive ablation are monitored overnight. We recognize the small possibility of delayed tamponade post-AFib ablation; however, this does not change our strategy given the very infrequent occurrence of this problem. Patients completing the procedure after 1400 hours are generally excluded from same-day discharge. All patients are re-evaluated by the MD and discharged if ambulatory, without chest pain or nausea, and have eaten and voided. Patients receive a follow-up phone call the next day by our AFib Center's registered nurse coordinator.

A same-day discharge strategy for AF cases requires considerable institutional commitment. Patient safety is a major concern. However, we feel this is a reasonable strategy given our previous extensive experience and safety record with AF ablation. Possibly more than half of the patients undergoing AF ablation are candidates for same-day discharge. Careful involvement of all members of the AF care team is required as the patients go through AF treatment and follow-up. Patients have access to our AF coordinator during work hours and can speak to an on-call electrophysiologist at any time.

Although the initial impression is that the cost of supplies increases significantly using multiple VCD per case, our cost analysis has been favorable. In fact, there may be a small cost benefit associated with early ambulation and same-day discharge.

The majority of the cost savings are related to reduced hospital bed utilization. Additional cost savings are related to reduced nursing hours related to sheath removal in PACU, elimination of protamine in some cases and potential reactions to protamine, reduction in pain meds for back pain, and reduction of Foley-related complications. The case turnaround time is also favorably impacted by this strategy. Patient acceptance to this has been very positive, especially for patients who have a reference from having undergone previous procedures. This has allowed several beds per day to be available for other patients on the cardiac floor. We have used the figure of 8 stitch technique in the past for managing venous puncture sites; however, in my experience, this does not allow the degree of hemostasis and

control over the puncture site that is required to safely manage AF patients.

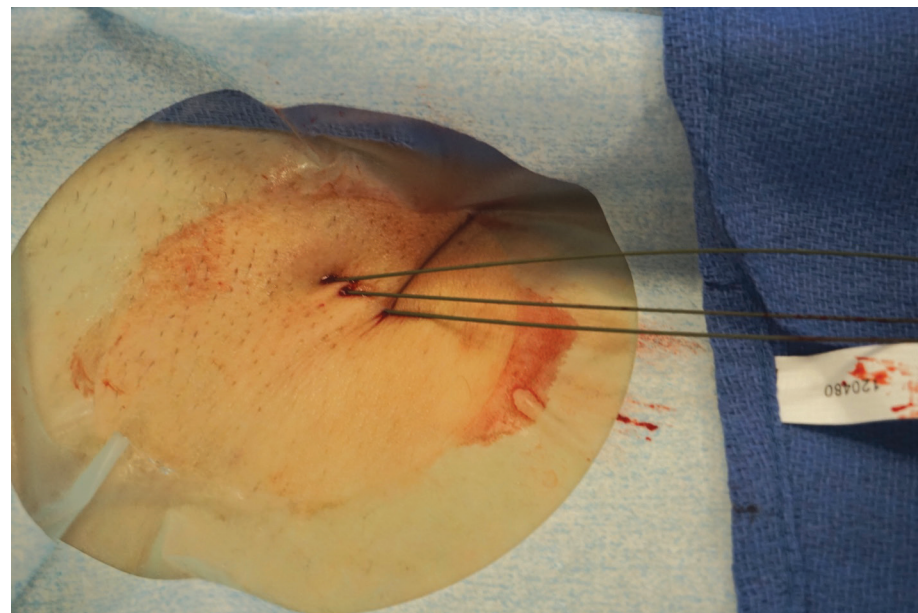
VCDs have been shown to be safe and effective in reducing duration of bed rest and possibly complications. Early studies have evaluated early ambulation after cardiac catheterization using the Perclose ProGlide.<sup>1</sup> These studies have shown a favorable outcome in regards to time to ambulation (TTA) and time to discharge (TTD). The Perclose ProGlide was found to be safe and effective for femoral artery closure in patients who ambulate within 30 minutes after cardiac catheterization, resulting in improved patient satisfaction and substantial cost savings.<sup>1</sup> It was also recently shown to be safe and effective in venous punctures up to 24 French.<sup>2</sup>

The recently concluded AMBULATE study using the VASCADE MVP Venous Vascular Closure System (Cardiva Medical) evaluated its use in the AFib ablation population.<sup>3</sup> This prospective, multicenter, randomized study compared the VASCADE MVP 1:1 with manual compression. A total of 204 patients were studied in 13 sites. All patients had multiple (3 or 4) mid-bore (6-12 Fr inner diameter sheath) femoral venous access sites. The treatment group had all sites closed with the VASCADE MVP, while the control group had all sites closed using manual compression. Both cryo and radiofrequency energy sources were used. In the VCD arm, there was a 64% reduction in median TTA, 63% increase in patient satisfaction for duration of bed rest, 3.9-hour median reduction in TTA, and 58% fewer patients received opioids.<sup>3</sup>

Studies have also shown the feasibility of same-day discharge for AF ablation patients, although these studies did not use a VCD to help facilitate early ambulation. Deyell et al<sup>4</sup> reported a series of 1579 patients undergoing AF

**When carefully applied, this strategy has the potential to reduce complications, decrease resource utilization, and allow cost savings, while improving patient satisfaction.**

ablation. Of these, 1407 (89.1%) were discharged on the same day of ablation. In the remaining 172 (10.9%), the common reasons for failure of same-day discharge were access site problems (39/172, 22.7%), intraprocedural complications (34/172, 19.8%), and anesthesia-related problems (29/172, 16.9%).<sup>4</sup> Notably, age, prior procedures,



**Figure 3:** Wire position after gaining access.



**Figure 4:** Immediately after VCD deployment (Perclose ProGlide Suture-Mediated Closure System, Abbott Vascular).

and comorbidities did not influence the ability to achieve same-day discharge.<sup>4</sup>

In summary, early ambulation and same-day discharge of AF ablation patients is possible for carefully selected patients in centers performing a high volume of these cases. The use of VCD has been shown to improve patient

*Disclosure:* Dr. Verma has no conflicts of interest to report regarding the content herein.

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