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Bachmann's Bundle – the conductor keeping the atria in tempo: a case report

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Introduction: The Bachmann bundle is the main pathway for rapid electrical conduction between the right and left atria and plays an important role in maintaining synchronous atrial activation.[1] Conventional right atrial pacing, depending on the lead position, may result in asynchronous atrial activation and prolongation of the P-wave duration. Bachmann bundle area pacing (BBAP) represents a more physiological approach to atrial pacing, aiming to preserve or improve interatrial synchrony.[1,2]

Case report: In a patient with sinus node disease and dysfunction of the pre-existing atrial lead, revision of the cardiac pacing system was performed. The baseline ECG showed sinus rhythm at a rate of 60 beats/min, with a P-wave duration of approximately 160 ms. Following extraction of the non-functional atrial lead, mapping of the superior vena cava–right atrial junction was performed. At the target site, characteristic late, fractionated low-voltage potentials were recorded. Pacing at this location resulted in a positive P-wave morphology in the inferior leads and shortening of the P-wave duration from approximately 160 to 116 ms. After confirming satisfactory electrical parameters, the atrial lead was fixed in the Bachmann bundle area.

Conclusion: Bachmann bundle area pacing represents a promising form of physiological atrial pacing that may provide faster and more homogeneous activation of both atria. A thorough understanding of the relevant anatomy, surface ECG, and intracardiac electrograms is essential for identifying the optimal implantation site. The presented case demonstrates the immediate electrocardiographic effect of BBAP through shortening of the P-wave duration.

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