In our opinion considering annuloplasty a procedure of choice in the pediatric age group with mitral regurgitation regardless of the type of pathology is ignoring what others in the developing countries of the world scream to make themselves heard.

Obviously an operation such as annuloplasty, which is less costly than a valve replacement and does not create other problems such as anticoagulation, is preferred. However, the authors have regretfully ignored the fact that all rheumatic mitral valves may not be suitable for this approach.

The type of rheumatic mitral regurgitation we encounter in this part of the world is quite different from what is seen in the West. The valve leaflets are fused and usually thickened up to 10 mm; they are extremely elastic but seldom calcific in the pediatric age group. There is usually thickening fusion, absorption and shortening of chordae tendineae, so severe that the papillary muscles are in close contact with the valve margin. The valve has a fish-mouth opening and usually is both stenotic and regurgitant. This is by far the most common type of rheumatic mitral valve encountered by us. For this type of valve pathology annuloplasty cannot be fruitful, while valve replacement seems to be the procedure of choice. Annuloplasty in such a valve would increase the degree of stenosis and lead to post-operative deterioration. This opinion is shared by others who deal with the same type of pathology.1,4

Our vast experience with this type of valve pathology has led us to this conclusion.9 Nevertheless our surgeons are always on the lookout for the rare and yet less damaged western type of mitral valve, which we have not yet encountered but which is amenable to annuloplasty.

I. ARYANPUR, M.D.
J. G. SHAKIBI, M.D.
Queen Pahlavi Cardiovascular Center
Tehran, Iran

References
3. Aryanpur I, Sissi B, Nazarian I: Rheumatic fever in developing countries. In press

The author replies:
To the Editor:

The letter from Iran does not relate closely to the statements in our article. We did not recommend annuloplasty, "regardless of the type of pathology." Our specific qualification of the recommendation for annuloplasty is repeated in the very last sentence, "where possible." We have recently had to use a prosthetic mitral valve in a three-month-old infant with unresponsive congestive failure. Although the child survived the surgery, we are not pleased with the long-term prospects, even in our community with excellent facilities for anticoagulant maintenance.

In developing countries, the lack of early medical care and poor living conditions undoubtedly weight the population of patients with rheumatic valve disease toward severe deformity, for which valve replacement is usually necessary. Neither we nor Doctors Aryanpur and Shakibi are personally responsible for the standard of living in Iran that effectively removes annuloplasty as an option.

WARREN G. GUNTHEROTH, M.D.
University of Washington School of Medicine
Seattle, Washington 98195

Audibility of S1

To the Editor:
The paper by O'Toole and colleagues on the contribution of tricuspid valve closure to S1 (Circulation 53: 752, 1976) is another example of the superb work of this group. I should only like to cavil at the next to the last word in the summary, "audible." Although very likely true, its inclusion in the summary is unjustified for two reasons: 1) audibility is not dealt with directly in the Material and Methods, nor indirectly in the Discussion, and 2) audibility, in any case, implies an observer performance study with appropriate design to minimize bias. These comments are not intended to criticize adversely this excellent paper which further advances our knowledge of S1. They are intended to forestall the possibility that the distinguished authors will be cited as having actually done an audibility investigation.

DAVID H. SPODICK, M.D., D.Sc.
St. Vincent Hospital
Worcester, Massachusetts 01610

The author replies:
To the Editor:
The authors are aware of the controversy regarding the interpretation of the "audibility" of a split first heart sound.1,4 We are also aware of the difficulty in setting up a properly controlled double-blind study to resolve this issue and our article did not purport to do this. Patients were chosen for this study on the basis of the first sound as appreciated on initial bedside evaluation by at least two of the investigators. A statistical breakdown was not done to determine how many had audible splitting of the first heart sound. However, the majority of the patients did have such splitting and precisely for this reason were included in the protocol. Also included were patients with aortic and mitral valvular disease and asymmetric septal hypertrophy where only a single component of the first sound could be heard on the initial bedside examination. These patients were studied to see if two components of the first heart sound could be recorded by internal markers. We felt the fact that two components of the first heart sound were heard on the initial bedside examination in the majority of patients justified the statement that the second or tricuspid valve component contributes to the audible events of the first heart sound. We appreciate and acknowledge the validity of Dr. Spodick's comments.

JAMES D. O'TOOLE, M.D.
University of Pittsburgh School of Medicine
Pittsburgh, Pennsylvania 15213

References
1. Rectra EH, Khan AH, Pigott VM, Spodick DH: Audibility of the fourth sound. JAMA 221: 36, 1972
2. Spodick DH: Fourth heart sound gallop or first sound? Am J Cardiol 31: 530, 1973
Audibility of S1.
D H Spodick

Circulation. 1976;54:848
doi: 10.1161/01.CIR.54.5.848

Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 1976 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/54/5/848.citation

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org//subscriptions/