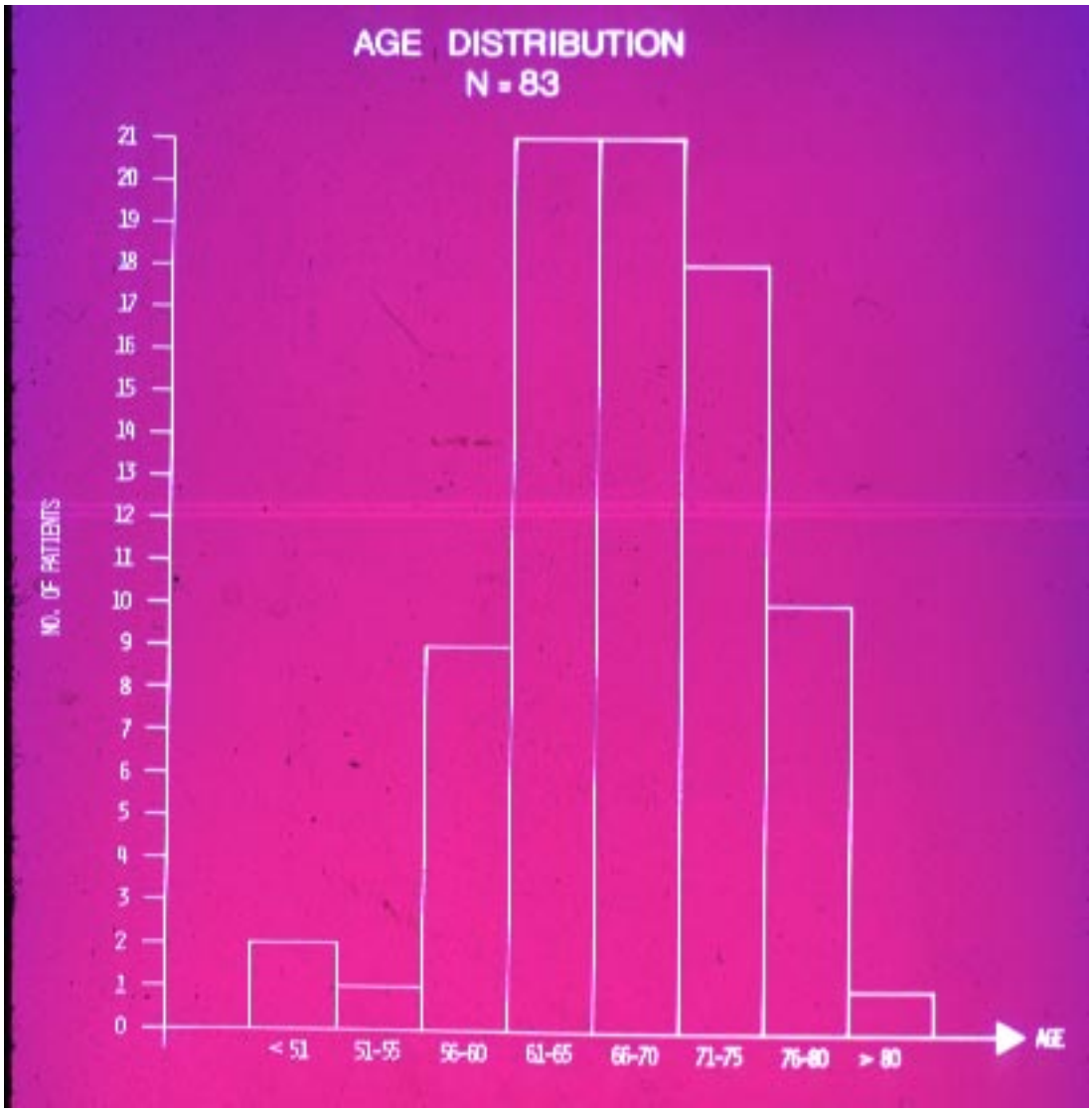
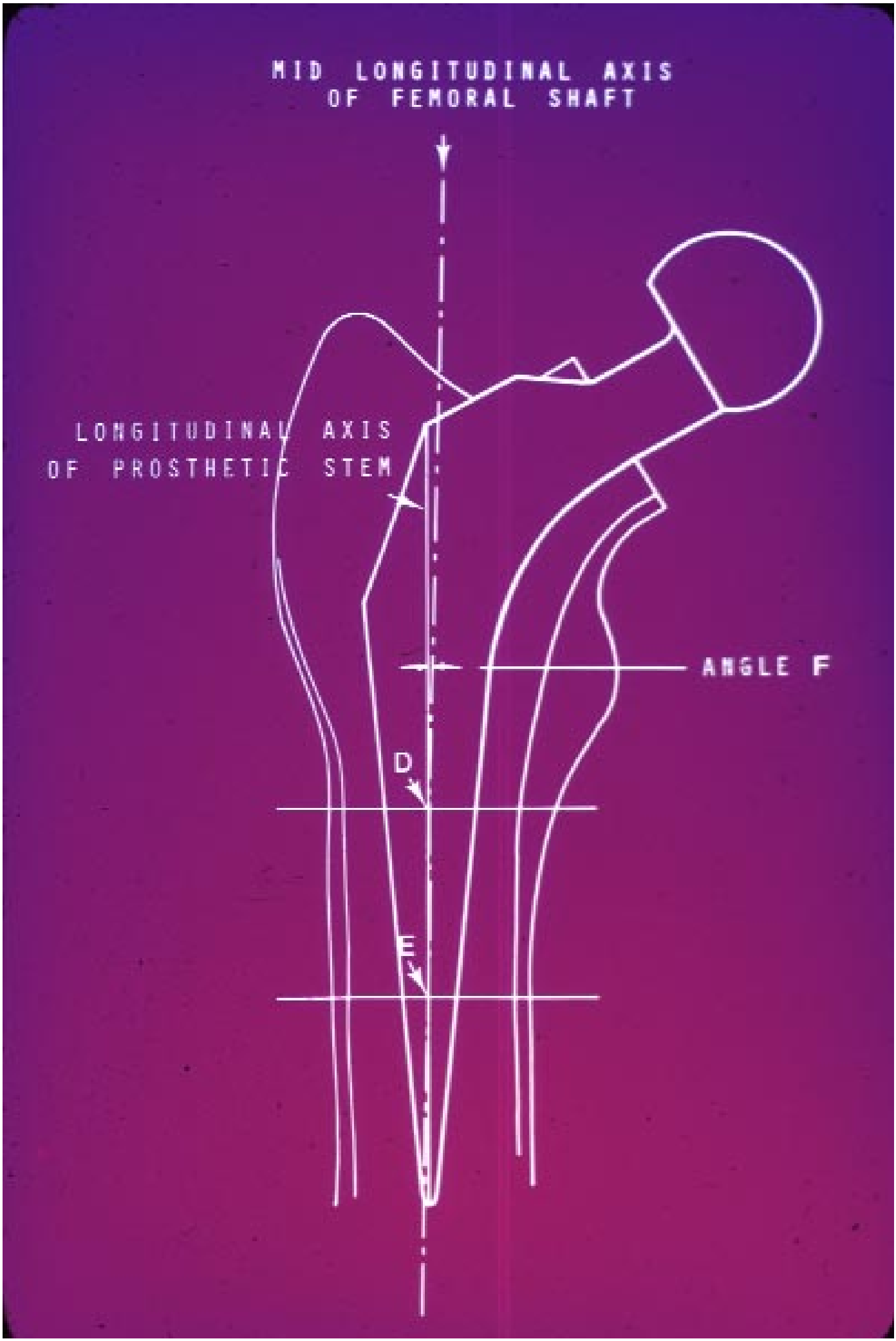
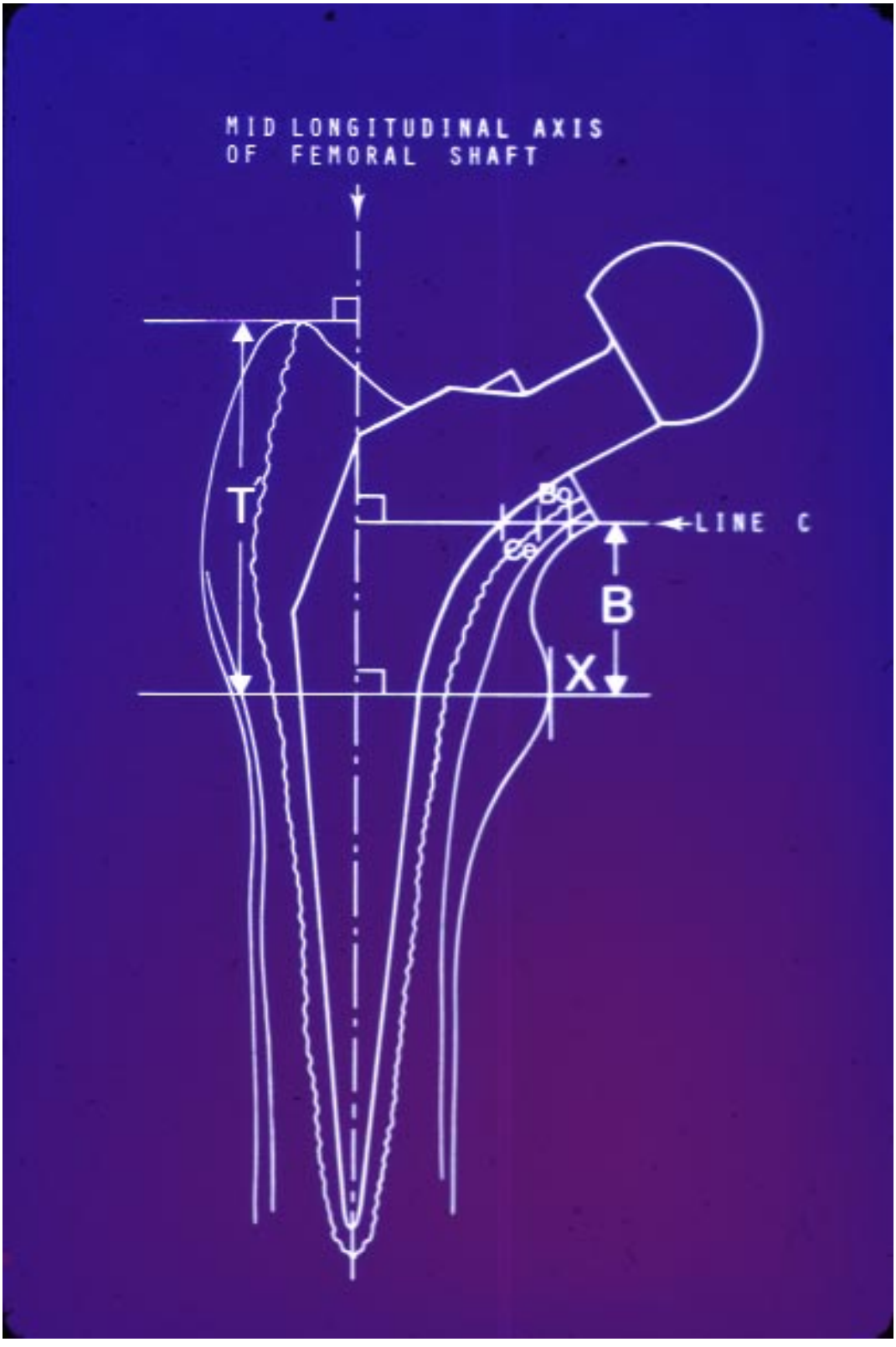
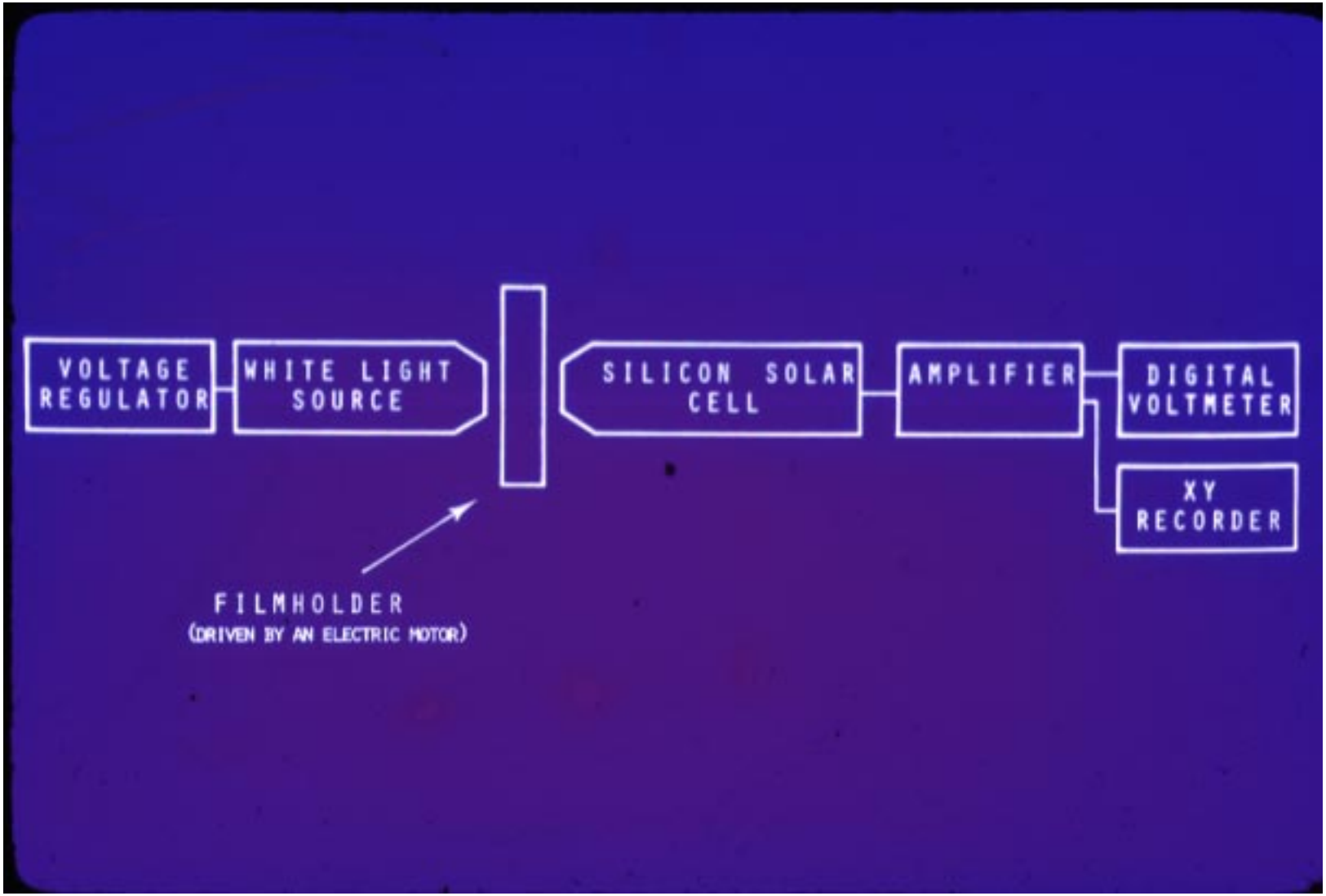
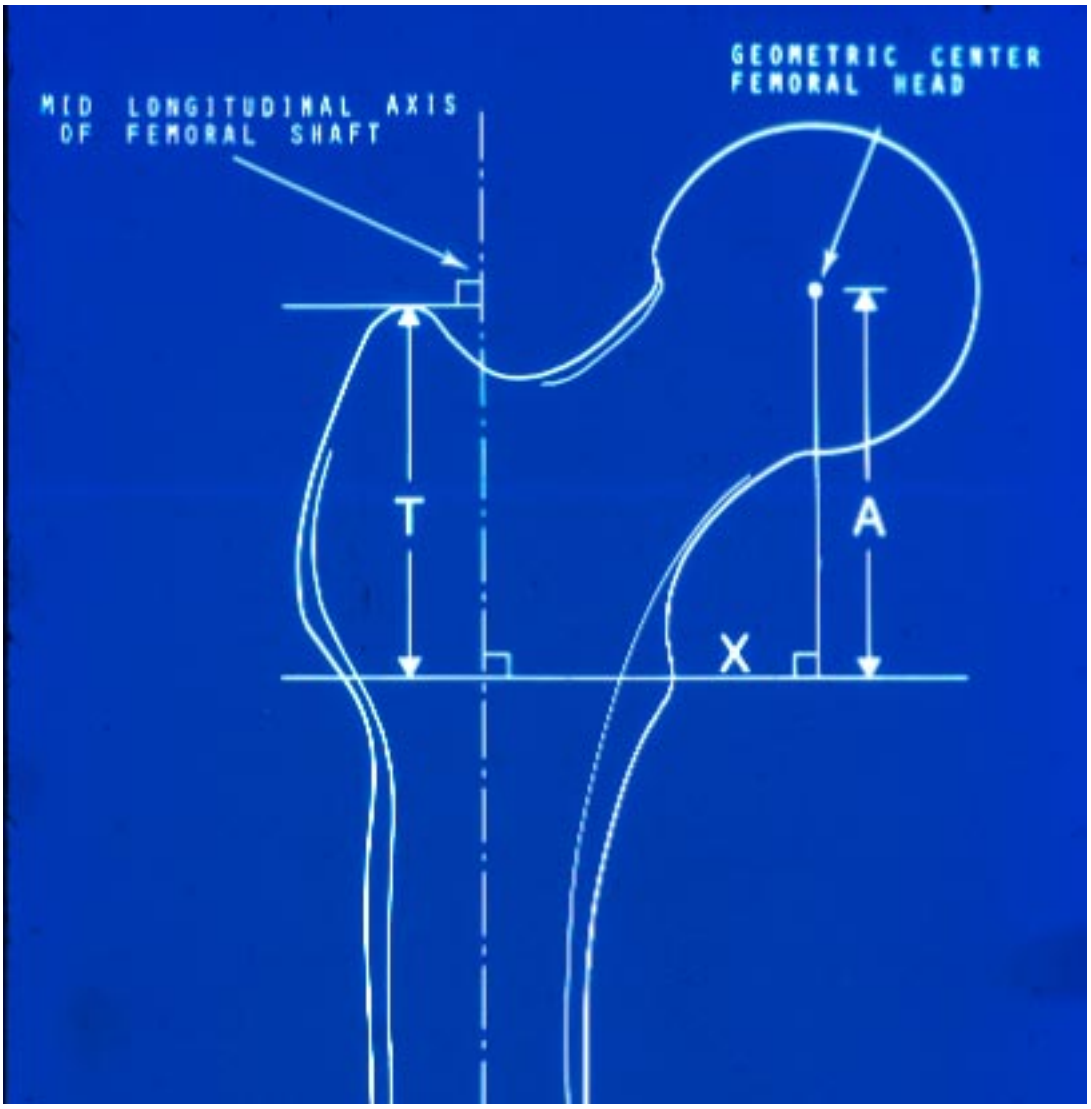

AGE DISTRIBUTION
N = 83
NO. OF PATIENTS
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
< 51
51-55
56-60
61-65
66-70
71-75
76-80
> 80
AGE


MID LONGITUDINAL AXIS
OF FEMORAL SHAFT
LONGITUDINAL AXIS
OF PROSTHETIC STEM
ANGLE F
D
E

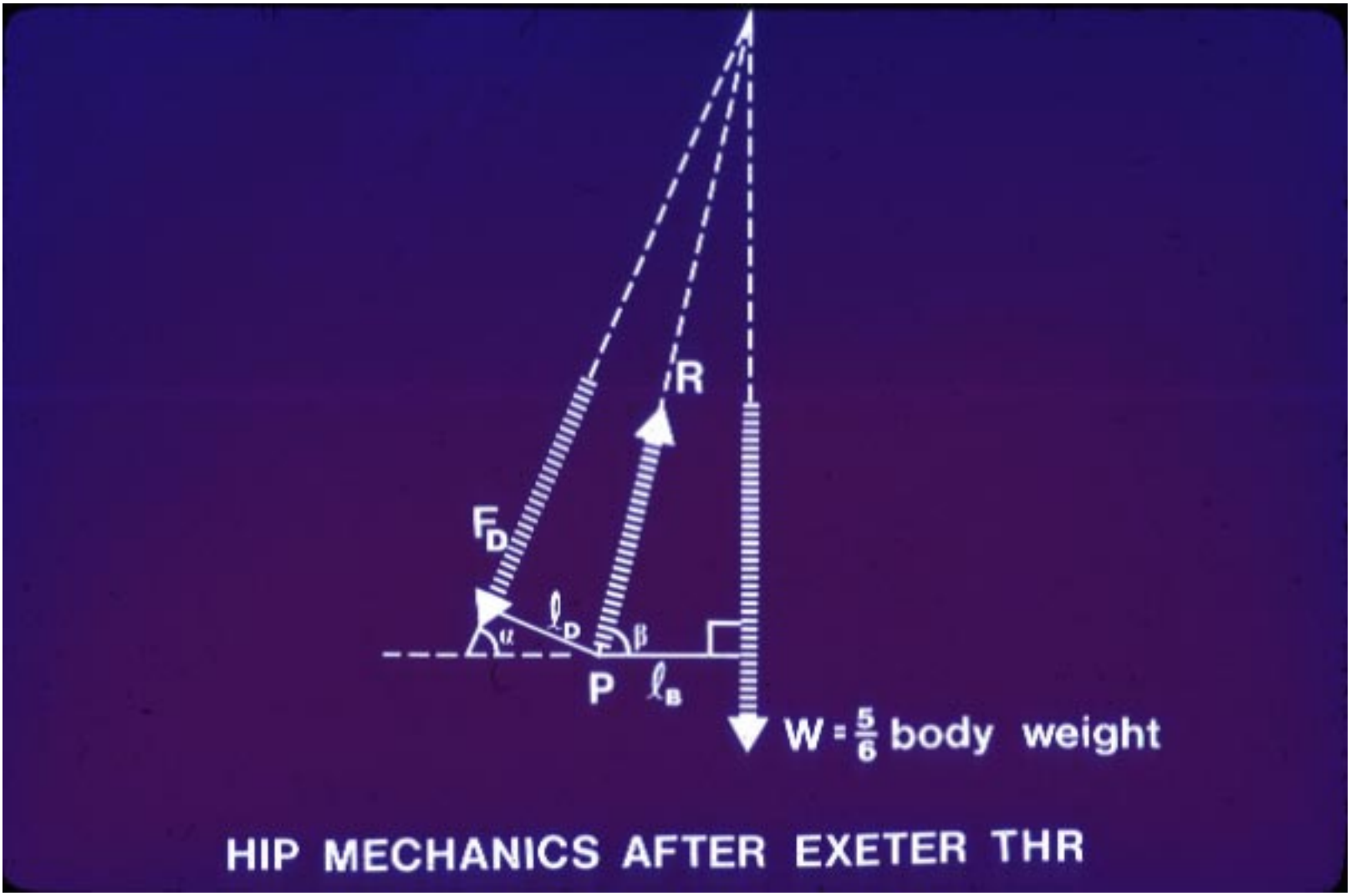

MID LONGITUDINAL AXIS
OF FEMORAL SHAFT
T
Bo
Be
LINE C
B
X


VOLTAGE REGULATOR
WHITE LIGHT SOURCE
SILICON SOLAR CELL
AMPLIFIER
DIGITAL VOLTMETER
XY RECORDER
FILMHOLDER
(DRIVEN BY AN ELECTRIC MOTOR)

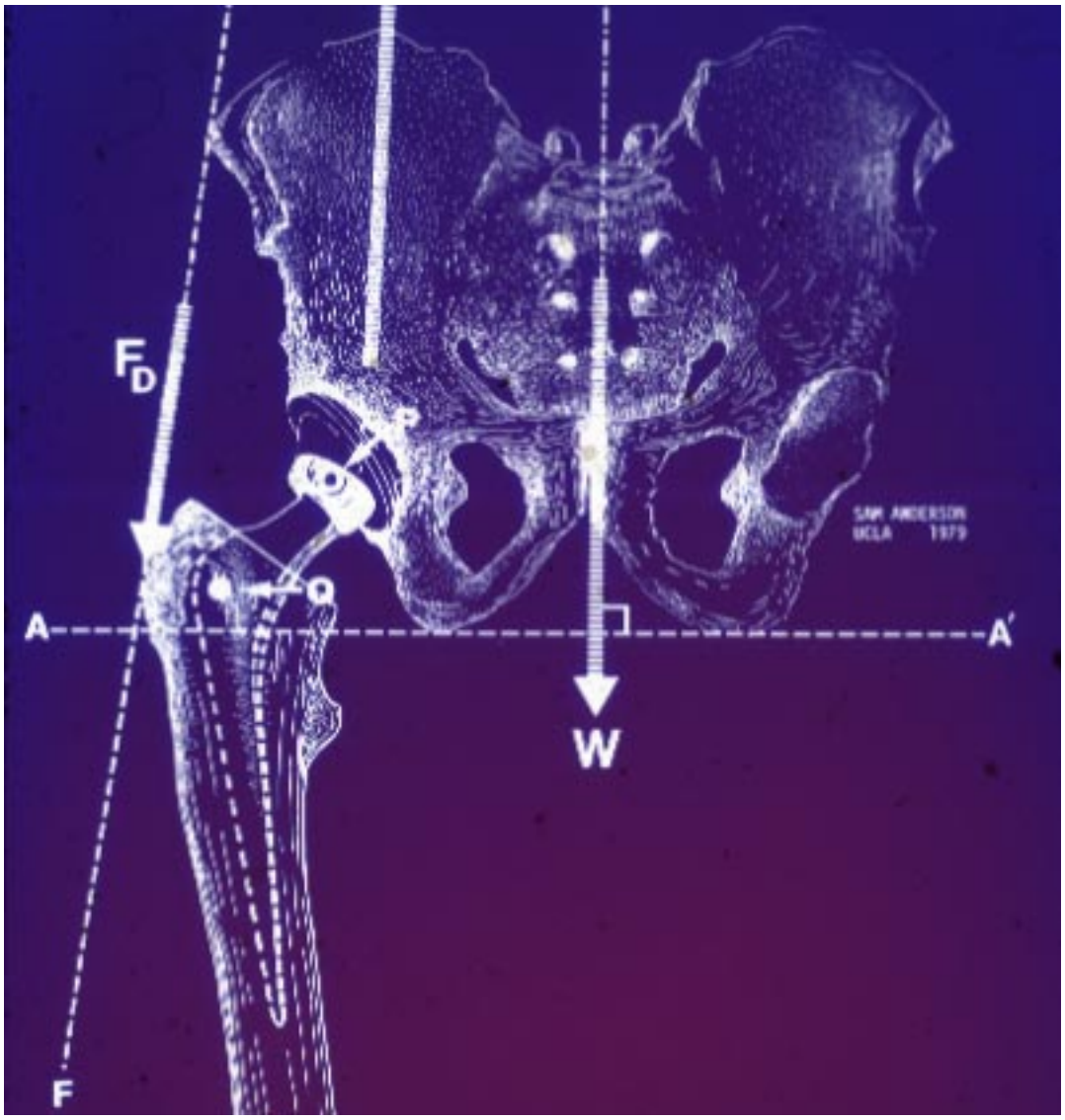

GEOMETRIC CENTER
FEMORAL HEAD
MID LONGITUDINAL AXIS
OF FEMORAL SHAFT
T
A
X

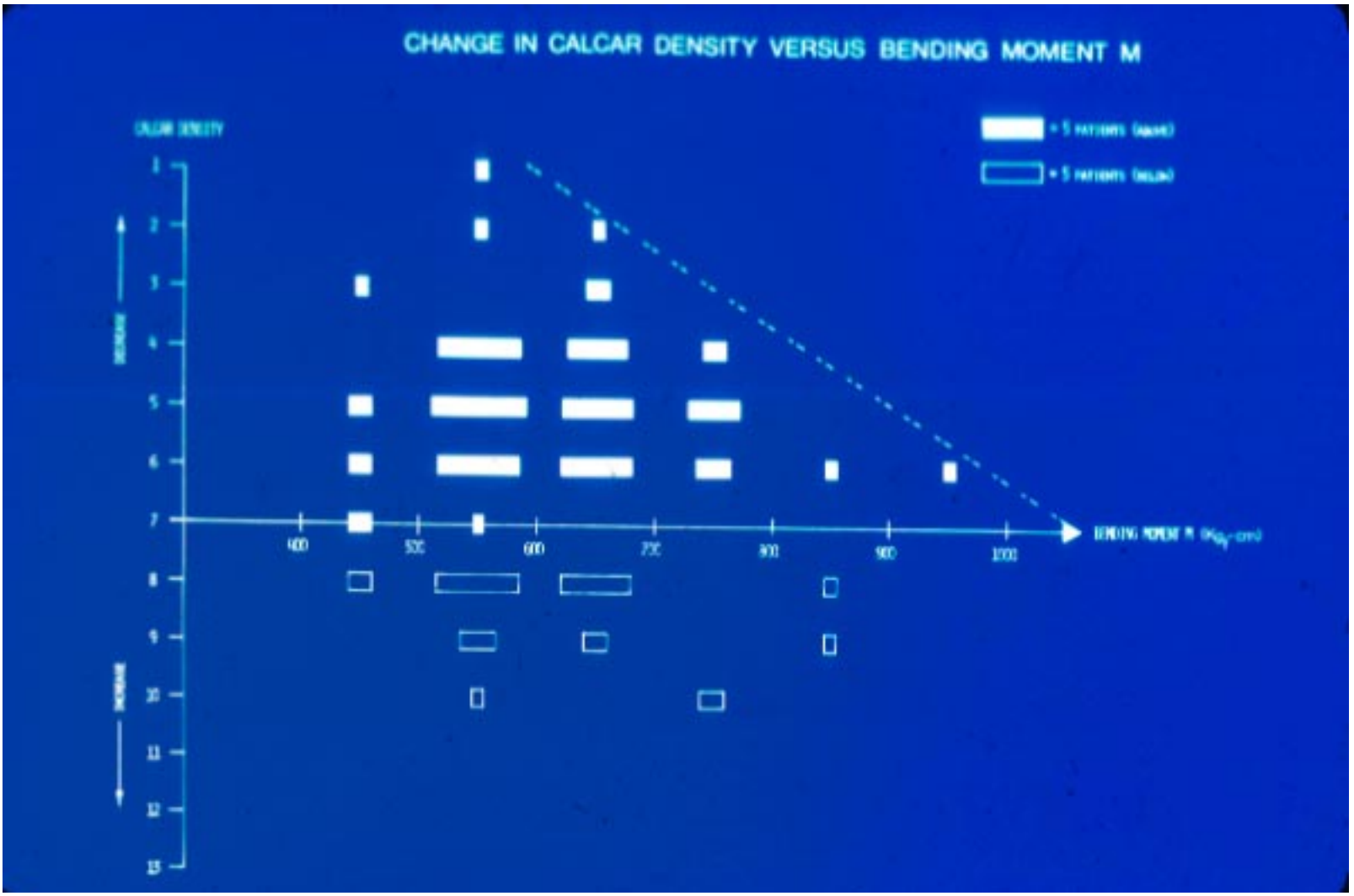
Microdensitometry - Calibration Studies

name	immediate post op. density	5 year density ALSH	density March 1979	R hip raised 2.5 cm	L hip raised 2.5 cm	maximum dev. %
Freeman	0.939	0.942	0.981	0.967	0.923	+ 5.91
Newton	1.168	1.426	1.563	1.503	1.484	+ 5.05
Tolman	1.450	0.705	0.643	0.601	0.606	+ 6.53
Powell	1.337	0.927	0.934	0.974	0.924	- 4.28



HIP MECHANICS AFTER EXETER THR


F_D
A
A'
W
F
SAM ANDERSON
UCLA 1979


CHANGE IN CALCAR DENSITY VERSUS BENDING MOMENT M
400
500
600
700
800
900
1000

A Study of the Radiological Appearance of the CALCAR FEMORALE after Total Hip Replacement using a Collarless Femoral Component

J. Black (Philadelphia)
A.L. Sew Hoy (Auckland)
A.J.C. Lee, R.S.M. Ling, S.S. Vangala (Exeter)

Changes in Bone Following Total Hip Replacement

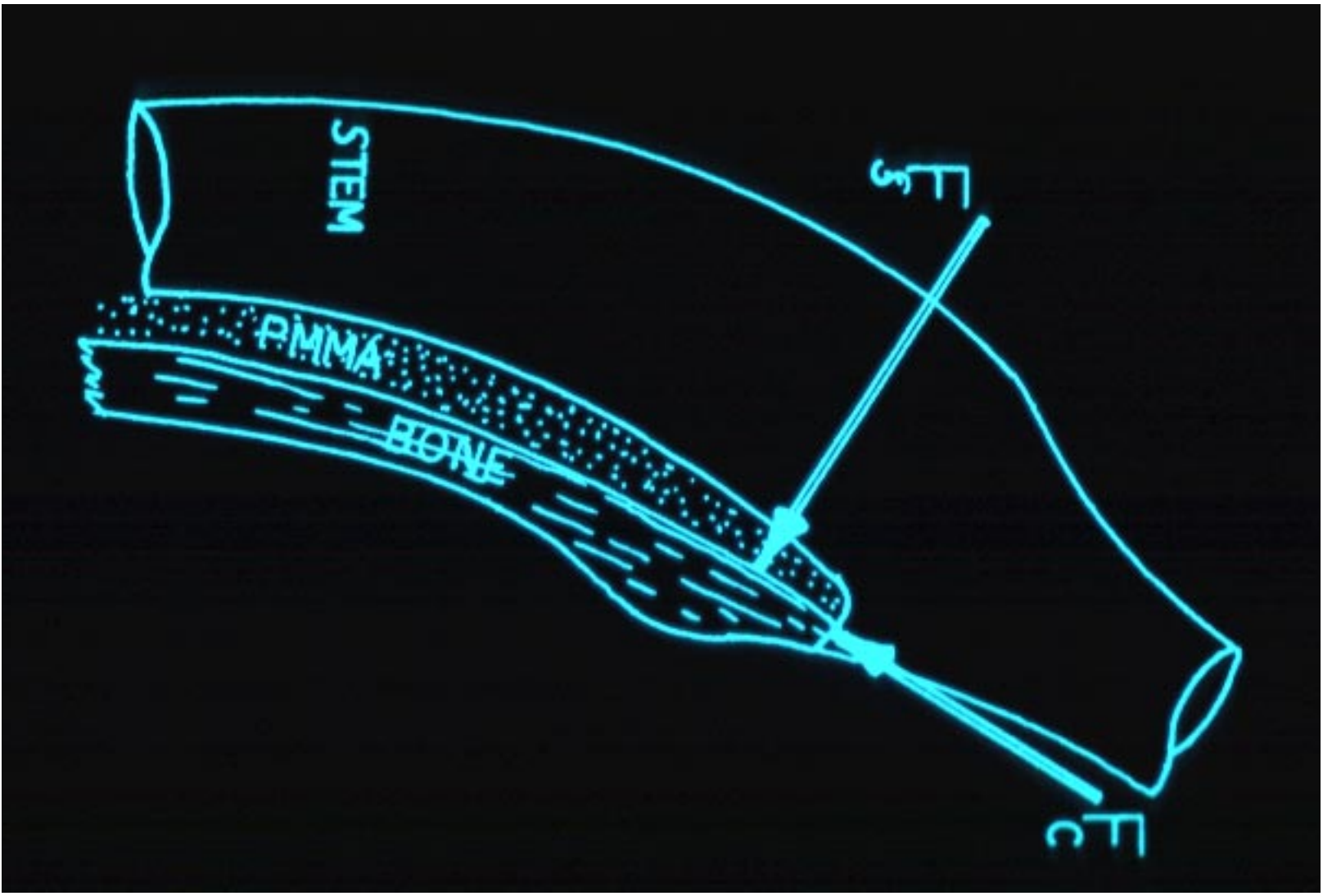
*Remodeling

*Resorption

*Cavitation

*Cyst Formation

*Fragmentation


STEM
PMMA
BONE
E_s
E_c

Sheep Femora
(in vivo)

Intact

Post THR

Lanyon, L.E., et al
(*Trans ORS* 4: 37, 1979)

Summary of Radiographic Study Indicators of Structure and Anatomical Change

*Level of Surgical Section of Neck

*Thicknesses of Cortical Bone and Cement

*Calcar Quality (4 indices)

*Canal Width and Shape

*Cement Mantle Quality (6 indices)

*Biomechanical Measurements

Summary of Radiographic Study Indicators of Structure and Anatomical Change

*Level of Surgical Section of Neck

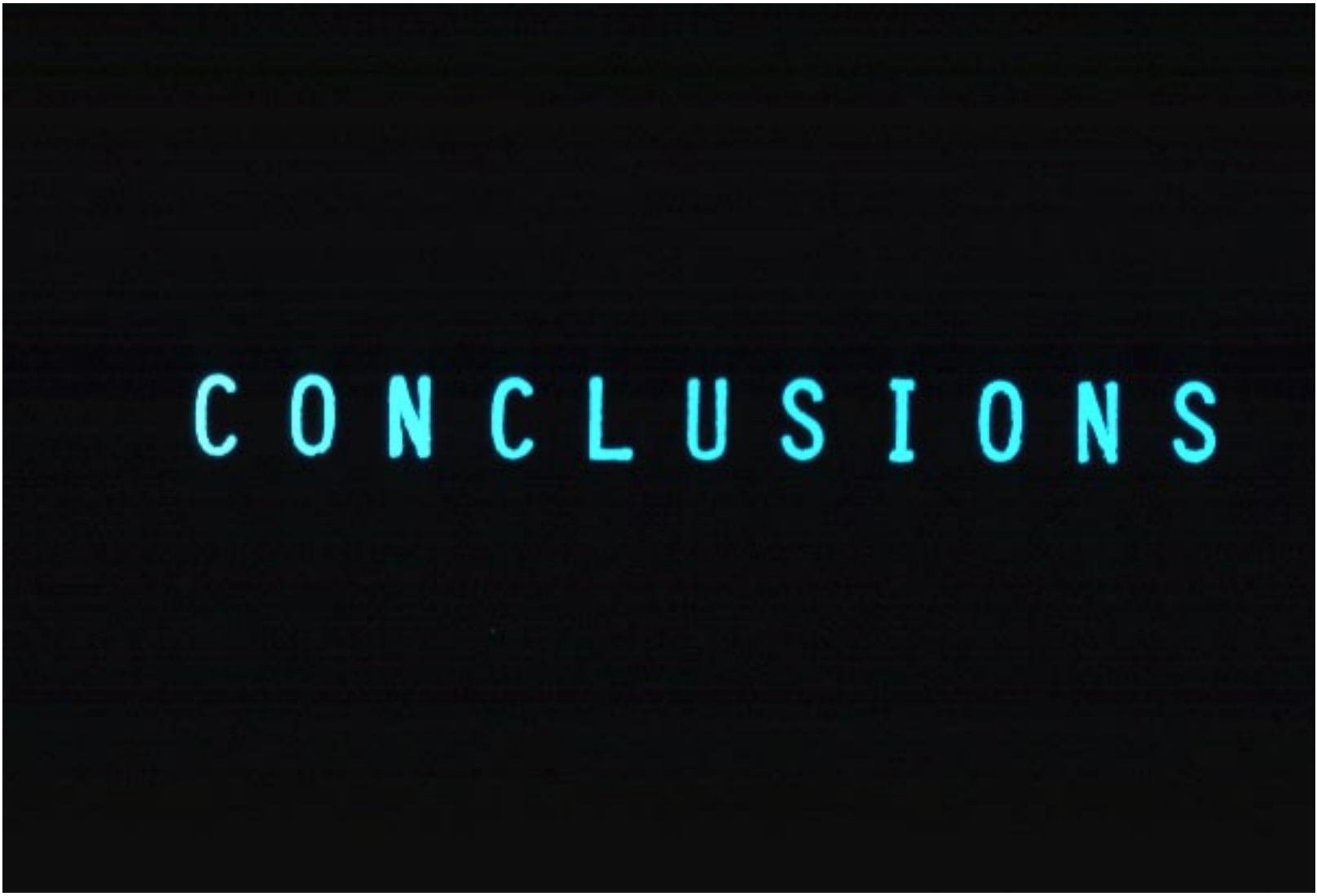
*Thicknesses of Cortical Bone and Cement

*Calcar Quality (4 indices)

*Canal Width and Shape

*Cement Mantle Quality (6 indices)

*Biomechanical Measurements


CONCLUSIONS