D e b g b q _ k Z I j Z Z y d l _ j b k [h b e d v Z g u o

I h d Z a Z l _ e v	= j m i i 1 Z n-51	= j m i i 2 Z n-78	= j m i i 3 Z n-41	= j m i i 4 Z n-9
K j _ ^ g h b k c a j Z k e l _ l	41,3±4,7	45,8±3,3	17,6±1,8	57,4±4,6
I h e f m ‘ q b g u ‘ _ g s b g u	43 (84,31%) 8 (15,64%)	31 (39,74%) 47 (60,26%)	18 (43,90%) 23 (56,10%)	9 (100%)
N m g d p b h g Z d e v Z g (k l k C H A): II III IV	 36 (70,59%) 15 (29,41%)	 33 (42,31%) 45 (57,69%)	 28 (68,29%) 11 (26,83%) 2 (4,88%)	 2 (22,22%) 7 (77,78%)
F _ j p Z l _ e v Z g j Z l y f b y	0	33 (42,31%)	2 (4,88)	0
E _] h q g l Z i y _ j l _ g a b y	5 (9,80%)	42 (53,85%)	5 (12,19%)	0
D Z j ^ - d h j Z d Z e v h g g u ^ c _ ? k	63,7±5,3	64,1±3,7	53,9±2,1	

d e Z i Z h g j Z b _ g l b j h \ Z i e h b i k j v _ d p h d h j g y Z h j l u d 2 b e 3 b f _ ‘ j _ [_ j v x Z i j b d h j j _ d p b b > F l l h j b _ g l b j h \ Z g e Z b i k j v _ d p h m b k l v _ \ i h e u \ b _ . g

M i Z p b _ g l j h m i i u ^ h k d h g Z h e x g h q Z e b d h j h g Z j h] j , Z ^ f Z l m g u W _ e D = b b o d e - b g b q _ k d h h k l h y , g ^ h _ k l m [u e k l Z g ^ Z j l , g u c l . _ q _ j _ k a j _ ^ b g g k m l x j g h l h . f b > e y h p _ g d b Z ^ _ d \ Z l g h ^ k h l k b l m , i Z . h i _ j Z l b \ g h c ^ h k l m i g h Z k g l Z l h f b q _ k k l g h m d l k m j j ^ p b Z w d k i h a b o p e b Z b i Z , g i h j h \ h ^ b e b g l j Z h i - _ j Z p b h g g l h h i h] j Z - n Z h g Z l h f b q _ b k d k h e _ _ ^ h \ Z g b . _ > e y h i j _ ^ _ e _ g Z g b y Z l h f b q _ ^ k d k h e m i g h k l : b D b F D q _ j _ f a g b ^ h k g n Z i f b j h \ - _ ^ _ g l h h i h] j Z - n Z h g Z l h f b q _ b k d k h e _ _ ^ h \ k Z g b _ [j Z e h g b ‘ g x x q Z k l i v _ j b d Z . j ^ > Z e y h [_ k - i _ b k i h e v a h \ Z k g i b _ p f b Z e v g m k] l h h c k ^ \ e Z y h i j _ ^ _ e _ i g Z h j y Z f _ l j h \ i _ j Z p b h g ^ g h u k e l m i h , \ d h l h j h [u e h j Z a j Z [h l Z K g > h > ‘ h r l e [Z _ \ u b f : . J > ‘ Z d _ e h (2 0 0 7 2)

O b j m j] b q _ k d l Z y g b . d Z l h e h ‘ _ g b _ [h e v g h g] Z h i _ j Z p b h g k g l h f e _ h [u q g h g Z k i b g _ l j b i j h l _ a b j h \ Z f g b l j b Z e v g k d] e h Z i Z g Z l d h j j _ d p > b F l l k l h e i e h \ _ j g m g l Z 3 0] j Z ^ m k h l h i _ j b j m x s o b h j m , j] . Z _ \ e _ \ h l j b d h j j _ d p > b F l l \ l j _ o k e m q Z l y k e l m i [u e h k m s _ k l \ i e h 4 , g \ 3 8 – i h 3 - f m f _ ‘ j _ [_ j v . x l j b w l h f l h e v d \ h ^ \ m k e m q , Z ^ y e o y m e m q r _ \ g b a y m Z e b a b Z d h Z b g b x e y p Z l h h j , u i j b r e h k i v _ j _ k _ d Z l j y s _ \ m p x Z k l \ u r - e _ ‘ Z s _] _ h [j Z b \ l j _ o i _ j _ c l g b Z i h i _ j _ q g m x k l _ j g h l h . f b j x b i j h l _ a b j h \ Z F g D b \ b k _ f b k e m q Z l y k e l m [u e h k m s _ k l \ i e h 3 - g f m f _ ‘ j _ [_ j v k i j Z , \ Z 4 ^ _ ^ e y e m q r _ \ b a m - Z e b a Z p b b h m [o h ^ g Z b ‘ g _ i c h e h \ c _ g , u i j b r e h k i v j Z k k _ d Z l j y s _ \ m p x Z k 4 - v] h j _ [j Z b \ 3 1

k e m q f Z b _ g b l h j Z d h l h k f h b q y _ l Z e k Z i k h v i - _ j _ q g h f c b g b k l _ j g l h . f k s h \ c k _ b k l Z e v g u o k e m q Z l y g b l h j Z d h l h [u f l e y Z h k m s _ k l \ e _ g Z i h 4 f _ ‘ j _ [_ j v x

L Z d b f h [j Z a , h f j h l _ a b j h \ Z f g D _ b d h j j _ d p > b F l l h k m s _ k l \ e y c e _ b j k f b b - g b l h j Z d h l h k f b j x Z \ Z h 3 b e b - f m f _ ‘ j - [_ j v . x D h ‘ g u j c Z a j _ m a t _ g s b g h] b [Z f h - e h q g r h _ x e _ a k r g b , a i r h d h ‘ g h k c d e Z ^ i d h ^ g _ c b g Z 3 – 5 k f g b ‘ _ k h k - e l Z r f m ‘ q b g e b g Z d h ‘ g h j l Z a j _ g Z i j _ \ u r Z e l Z k f l j Z \ Z y f Z f f Z j g Z Z y j l _ j b i y _ j _ k _ d Z e l Z k j v d Z j ^ \ k d j u \ Z i e j b ^ h e y g u r _ i Z j Z e e _ e ^ v b g Z h n j Z] f Z e v g h g f m j \ r > e y i e Z k l b d > b F l l [j Z e h g b ‘ g x x q Z k l i v _ j b d Z . j ^ > Z e y h [_ k - i _ q _ g b B y D i j h \ h ^ b e d b Z g x e y p [b _ x ^ j _ g g h c Z j l _ j b l b e b \ h k o h ^ y s Z _ h q j . l u l h e u \ _ g u d Z g x e b j h \ Z j e Z b a k ^ v _ e v \ g _ h o g y \ y g h a g Z y d Z g x e y w \ h ^ b e Z l g k v j Z g u i h 3 - f m f _ ‘ j - [_ j v x i h k j _ ^ g _ d e x q b e q b g g h b d k b i j Z \ Z b g b ‘ g y i y h V I I f _ ‘ j _ [_ j v i x h i _ j _ ^ g _ i h c ^ f u r _ q g h e d o g . b F 5 _ l h ^ b B Z g _ h l e b q Z e Z k v h l h [s _ i j b g y . l h c

M r b \ Z g k (n - 1 5) b e b i e Z k l b d (n = 2 6) > F l l i j h \ h ^ b e g b Z j Z [h l Z x s k f j ^ p [_ a i _ j _ ‘ Z l b Z y h j l . u H k g h \ g u m f k e h \ b j _ h f n - b e Z d l b d h b a ^ m r g w h f q [h e b [u e h k h o j Z g _ g b _ i h k l h y g a g Z i h e g _ g d g j u h f \ v x e _ \ h j l h j _ ^ k _ j ^ . b y R \ u g Z q b g Z g e Z b d e Z ^ u k Z k l Z f h c g b ‘ g _ b c h q d b . \ h [e Z k g b b ‘ g _ i c h e h c \ _ g . u > _ n _ d a l Z d j u \ Z g e _ b i j _ j u \ g u r f h f , \ l h f q b k e b _ i j b i e Z k l b ^ d _ n _ d Z l Z h l h i - _ j b d Z j ^ . h f f h k e _ ^ g r h b d a Z \ y a u \ Z \ e _ j g o g _ f m] e m j b i _ j _ i h e g _ g e g _ h \ f h f j _ ^ k _ j ^ b b

d h l h j h k _ h a ^ Z _ Z k g y _ k l _ a b h e j h b] h ^ f h o _ g Z Z i i Z j Z b k d m k k l \ _ ^ g u g o n Z k g b y

I j b i j h l _ a b j h \ Z f g b j b Z e v g b e j h Z i Z g Z a Z s b l f Z b h d Z j ^ h Z Z g h d k h b k m s _ k l \ e y e Z k v g _ g g w v e _ d l j \ h ^ b ^ e h ‘ d b h e h k i v - n Z j f Z d h o h e h d ^ Z b j ^ h b c h i e _ k j b \ _ c ^ _ g b _ f j Z k l \ h ^ j Z h k i b l Z k e \ y y l h] L h f Z k (Z R :)” b e b d j h \ y g b d Z j ^ b h i e _] b d h j _ g Z v h j l u > h k l m d F D b l j b d m k i b ^ Z e v d g e h Z f i n Z g m h k m s _ k l \ e y q e k j y a j Z \ h _ i j _ ^ k _ j ^ b b _ f _ ‘ i j _ ^ k _ j ^ g i m j x _] h j h . ^ < d l m \ k _ k e m - q Z y o b k i h e v a h \ Z ^ e b k k d v h \ u j h l _ a u n b j f u “ W F B D ? K E B D - K ” “ F _ ^ b g (J h k k) b b y e b “Sulzer-Carbomedics”. N b d k Z p i b h y l _ a h Z k - m s _ k l \ e y e Z k v ^ _ e v g u f “ b l ”- h [j Z a g u f b r \ Z f b j _ ‘ _ g _ i j _ j u \ g u r \ f h f < 22 k e m - q Z y o g Z j y ^ k m i j h l _ a b j h \ Z g f b b l j f Z e v g h] h i j h b a \ _ ^ Z g g Z m e h i e Z k j b b d m Z k i b ^ Z e v g h b f Z e v g k Z l y Z [b e b a Z p w b d y k i h a b h p i b y j Z] h d e Z i Z g Z

H i _ j Z p b i y k e d h j j _ d p b F l l b e b i j h l _ a b j h \ Z F g D b a y Z d Z g q b \ Z j e Z g k b v j - h \ Z g b _ f e b r v i j Z \ h i c e _ \ j Z e v g h e c h k b b _ j _ a d h e - j h a Z g g j n Z x g m h l d m ^ [Z e Z \ _ ^ _ g Z d Z g x e y g b ‘ g _ i d h e h \ c _ g . u

I j h l _ a b j h \ Z g b h k m s _ k l \ e y q e h j k a x i h i _ j _ q g k m l x j g h l h f i b h 2 (n-8) b e b h 3- f m (n-43) f _ ‘ j _ [_ j v x l Z a j d a ‘ b j h \ h ^ b e b i h i _ j _ q g Z ^ j m ^ b g ^ h e c b g h k j _ ^ g 7 – 8 k f K l _ j g h l h f i b j k h \ h ^ b e b e h @ b] , e a - Z l _ f i _ j _ \ y a u \ Z e e b j _ k _ d Z j e Z b m x g m - l j _ g g x j x j m ^ g m Z j x l _ j b x _ j b d Z j k ^ d j u - \ Z e b d j _ k l h h [j . Z a g y h [_ k i _ q _ h g k b d y m - k k l \ _ g g h] d h j h \ h h [j Z s _ (g B b D y i j h \ h ^ b e Z k v d Z g x e y p b ^ y j _ g g Z h j d _ j b (n - 41) b e b h - k o h ^ y s _ Z d h j l (n - 10). I j Z \ h i j _ ^ k _ j ^ b h _ \ k _ k e m q Z d Y Z g x e b j h \ Z h e ^ h g k h d c Z g x e , _ c d h l h j Z k y \ h ^ b e Z k g k v h i _ j Z p b h g i g h h e j y h q j _ a d h , ‘ g h j _ d a h e h l m Z x g i m h k j _ ^ g _ - d e x q b q g k e b g b g b d Z - _ f _ ‘ j _ [_ j v \ u r _ m j h \ g y k l _ j g h l h . f l 5 b l h ^ b e B Z D g _ h l e b q Z e h Z l k v h [s _ i j b g y . l h A c Z s b l f Z b h d Z j ^ h Z Z g h d k b b h k m s _ k l \ e y m e Z Z j k f Y Z d h o h e h ^ d h Z \ j h ^ b - h i e _] b k \ c \ _ ^ _ g b j Z k l \ h “ j Z h k i b l Z k e \ y y - h] h L h f Z (k Z R :)” b e b d j h \ y g b d Z j ^ b h i e _] b b j Z o b k l _ g d Z k o j ^ p b Z i h a \ h e y x s i m j k x \ m k l v e _ _ \ h d h j h g Z j g Z h j c _ j b k - h \ k _ o k e m q Z b y k o i h e v a h \ Z ^ e b k k d v h \ u j h l _ a u n b j f u “ W F B D ? , K “ E B D - K ”, “ F _ ^ b g (J h - k k b) y b e b “Sulzer-Carbomedics”. N b d k Z p Z b h y j l Z e v g h j] h l _ a h Z k m s _ k l \ e “ y l e ” Z b k e v b Z ”- h [j Z a g u r f \ b Z f b J Z g Z m h j l u m r b \ Z e b m - o j y ^ g u r \ h f < h \ j _ f y \ h k k l Z g h \ b l _ e v g h j] b h g _ h [o h ^ b f h e k _] b d i h _ j _ c l b d i h e g h c i _ j b h ^ Z e y i j h \ _ ^ _ g b j y n b e Z d l b d - a ^ m r g h w c f [h e , b f b Z k k Z k Z _ j ^ p b Z ^ _ n b [- j b e y p b i j b f _ g y e k b _ p b Z e v g g Z u f c b \ b ^ h - b a k v g _ g g w v e _ d l j \ h ^ b ^ e h ‘ d b h e h k i v - j b d Z j ^ b Z _ j _ ^ g _ k j j h _ ^ h k l _ ^ g j b _ g b j h \ Z e b h ^ g h c j _ g Z ‘ g h j c m [d , h c \ _ ^ _ g g b q c j _ a g b ‘ g x x l h q d i m h e h k i b j b d Z j i ^ h Z k j _ ^ - b g g h œ b g b d b \ u \ _ ^ _ g g q m x j _ d a h e h l m Z x g m g b ‘ _ f _ q _ \ b ^ g h m l j j h k l d P Z _ e h k l g h] j k - h v ^ b g u \ h k k l Z g Z \ e b h \ Z g e b b f Z ”- h [j Z a g u f i h e b k i Z k l g u h f f b a l b l Z g h \ i j b \ h e , d b f y] d b l _ d Z g - b g _ i j _ j u \ g u r \ f h f , g Z d h ‘ m g Z d e Z ^ u d Z h k b _ l b q _ r k h d \ b c

H ^ g b d b a \ Z ‘ g _ c r l b m o k e h \ ^ b e c y \ u i h - e g _ g b y h i _ j Z p b i c j y f h c j _ \ Z k d m e y j b a Z p b b f b h d Z j g Z j Z [h l Z x s k f j ^ p y _ \ e y _ l h k - y h b f Z e v g k Z l y Z [b e b a Z b p w b d y k i h a b h p i b y j Z p b h g g h i] h e y k k h o j Z g _ g i b b _ f f e _ f h - c f h ^ b g Z f . b d b

K m s _ k l \ m x g s Z k x _] h ^ g y r g b g k v b - k l _ f u k l Z [b e b a Z h p h b d Z j (^ K Z F) ^ h k l Z l h q g h m ^ h [g b u g Z ^ _ ‘ . g k l Z f u j _ Z k i j h k l j Z g _ g g u _ b a g b e - w l h k l Z [b e b a “ Z D C T O P U S ” c k b - k l _ f h c n b d k Z p \ b h j o m r d E b @ “STARFISH” (Medtronic, USA), k l Z [b e b a “ Z G E N Z Y M E ” (Genzyme, USA), k l Z [b e b a “ Z C T S j Ultima OPCAB System” (CTS, USA), “ D H K F ? - Y < : D 1 ” (D ; “ < a e ”, J h k k) . b y

G Z j Z d l b d b k i h e v a h k Z Z e [b e b a Z l h j u f b h d Z j d Z d h f i j _ k k b h g b Z h d p h \ Z d m - m f g h] h j b g p b i ^ Z _ c k l . \ b y

H k g h \ g h h [d c _ f \ f _ r Z l _ e v k u l \ h e g y e b k i h f h s v x \ Z d m m f g k u b d k l _ k f l Z [b e b a Z p b b “OCTOPUS” 4 n b j f u Medtronic. I j _ b f m - s _ k l \ h k l Z [b e b a Z p b h k g b g k u _ o f Z d m m f g h] h l b i Z a Z d e x q Z \ _ f l k g y b f Z e v g b e b y g h g b Z] _ h f _ l j b i k e h k l k c j ^ p b Z h [_ k i _ q _ h g l b b g h k b l _ e g y g h h ^ \ b ‘ g l k] h m o h] h _ j Z p - b h g g h] h h e . y

< d Z q _ k ^ \ h _ k l m b Z k i h e v a h k Z _ e ^ b b g g m x k l _ j g h l h , f b l x [_ k i _ q b \ Z x s h m l x b f Z e v g u m _ k e h \ ^ b e y y j Z [h l u g Z \ k _ k l j m d l m g _ h [o h ^ b f h m k k l m b s _ k l \ w b d v k l j _ g i g h h ^ _ d e x q _ g Z b i _ Z j Z B Z D , \ k e m q m Z k l h c q b \ h] h i Z ^ _ g b i y h d Z a Z l _ e _ f d h ^ b g Z , f b \ d h b a - g b d Z x s b i g j b i _ j _ ‘ Z l b D b : b e b ^ b k e h d Z p b b k _ j ^ . p l Z h ^ h [g u ^ c h k l m i h a \ h e y x u ^ _ e y l v E < = : \ i j b \ u q g u ^ o e y o b j m j h Z k e h \ b b y o

kl_jghlhfbbpb_gljZeivlg^hdexqbZlvi-Z
jZlBD Bf_ggtwlhr^hklmij_^hklZ\ey_leZ]Z_fZhjd_jbhlh(fbjbe_gh\gZbylv2.0.
objmj]^mklZlhqjghkljZgk^\eZyfZgb-im kb]eh22–26 ff). Gblvh[\b\ZDy;aZly-]b
eypbgczZk_j^pb_iha\hey\u_klvbjZgm \Z_l,_l_fkZfu,fi_j_‘bfZiyhk\._Dlh
aZ^gxkn_joghkkly^.pZ fm‘_wlhkihkh[kl\mu\l_^_glgxm‘gh]h

l_jbdZj\kdju\Ze\bb^i_j__jgmlhck_]f_gZZl_jb\bjZfdknlZ[beba Zbl^hjZ
“L”, krbjhdbfZkk_q_ggbZmfjh\g^b-Z ihegbl_evngbhdkZ.pbb
njZ]fZevgjhnc_joghkklbj^.pVZWlhiha\h Djhf_gZeh‘_glbyb\guo\h,\^ey
eyehkha^Z^nihegbl_eivjghkljZgk,l\h emqr_\bamZeb,aZkpibhbevah\bZjebo-Z
g_h[oh^b^fehy^bkehdZlpjbdbmrkbj^pZ pbxhi_jZpbhggheyihZq_cieh]h
ijbwdkihabipbhjZ‘_ggDojZkiheh-‘_g nb.aZkl\hjgZ_ihkj_^kl\\gadhlgmuih-e
guogZ[hdh\ubaZ^gkc_gdkZojZ^.pCZ gy_fhjZhgZklh.fh>abZklZevgZugZklhfhau
djZyi_jbdZj^gZZdeZ^u\rZe-b^j‘Ze,db \uihegyiehbbimdhg_lp,dg_ijju\guf
aZdhlhjuhkms_kl\eiybedp_h[oh^bfhklbr aZhlhjuhkms_kl\eiybedp_h[oh^bfhklbr\hfijhe_gh7/0, ih^dhgljhemfe-bqb
ih^ly]b\Zgib_jbdZj^bZa jZg.u lhke_ \Zxs_kcilbd(bo4.0).
\kdjulbiy_jbdZj^uZihegyehlgljZhi-_jZ >eyhp_gjdb_amevlhZlZjZpbbamqZeb
pbhggmjx\babdhjhgZjgZujd_jbc^ey ^ebl_evgbhkdvmkkl_gjgh\]hhh[jZs_gby
hij_^_e_gehydZebaZlpjbZb‘_ggubo; bbr_fbbbbhdZj\^Zgljzhi_jZpbhggghf
oZjZdl_bjoZhjZ‘_gbZclZd‘^eyhij_^_ jbh;^ebl_evgBkEvh[t_fdjh\hihl,_jb
e_gb\yhafh‘ghk\lubiheg_g^bbykZevguokjhdbj_[u\Zgbyi Ze Zlj__Zgbf Z,pdobb
ZgZklhfhgaZhZ\[hlZxskfj^.pl_hkei- jmj]bq_klhlh^f_e_gpbhkeh‘g_,gkbya-Zg
jbdZj^bhlhgfZbb^gbma[jZgrjZghjZ-krb guckf_lh^bd\hichke_hi_jZpbh_gjgb-hf
jbl_emyklZgZ\ekl\ZZebeba Zbl hjZj^Z ^,_hkeh‘g_gbb]chkibl Zevgghlc Zevghklb
JZfdknlZ[beba Zilhbj\Zh^be\bg_h[o-h^b (lZ[.e2).
fh_iheh‘_gbe_hkdhkhnvodkbjh.\Zhe[b <ihke_hi_jZpbh_gjgbhhf^_q_lujo
\b\gur_\u[jZebgZhl^_evgmnjgbd._lu kemqZhyfb_q_gnukeh‘g.gDbZyldb^gba
Kjza\mdexqZ\eZbdmmfjgZha j‘_g^be y lZ[.e2,\^\mkoemqZgZyZbex^Zeihke_hi_
“ih^kZku\”Zgnbqy Zkfbbldjh\^aZhgZ_gZkl-hfh jZpbhggdjnh\hl_q,_kg\by_aZgkgdn_^h-klZ
ZgZklh.fhMaqZZkfhbdhdZj\^aZhgZ_gZkl-hfh lhqghgc_cljZeba Zlpbbjdbgjbbj_lh-jZ
aZhdZau\Z“ekky_r_gguhfl_fkZfuf dhlhfbbkihqgbdjh\hl_q_gbyueb
nbdkbjh\Zgdgkulz[beba Zpbjlzfgdgbc gZc^.gbhke]_fhklZlbq_fkd^bbdZ-f_g
Wdkihabipbjy^g_gdbkoh^ysZjc_ lhaghcjZibdbjh\hl_q_hgkblZgh\.e<gh
jbb(lG:) gZb[heijhklZ^hklZlhqjhg-h h[bbkoemqZbysm^\mjoZpb_ghhj_^_
de Z^u\Zkgzbeyn_lichb^k_j^,p_ihehklv e_gdZebgbwdZkkm^Zlbi\eghjjhlzlh-h
i_jbdZ.j^WZdkihab^pbbZb]hgZeZjghcbb jZyaZdhgqbie Zkjv Zevigmhgdp.b<wclbo
(>:) lZd‘^hklb]zlebbdeZ^u\Zkgzbe-fn_ kemqZjy_olhjZdhlhfibhbke_hi_jZpbhggZy
lhd\ihehkilvjbdZ,jZZjb_\ujZ‘_gghf jZgaZ‘be\Zhjbqgugfzly‘_g.b_f
eZl_jZevigZhkfiheh‘,gjbhbZpbhc_jZ =hkiblZevegZlyZevgh\klpv_ehfgZ
pbhggkj]hegZZobjm.j]Z]jmiimhi_jbjh\ZgghuebBOKkhklZ\beZ
>hklmdijZ\hcdhjhgZjgZnjd_jbb 3,9%. ljbqbguijb_^rbde_lZevghbkm
(ID:) hkms_kl\eiymelbzfjhlZpbkbj^pZ oh;^mp_[uebk\yaZkgfubgbbg\Zabl\gdhc
\hdjmkjh[kl_gghhkcbHkeZ[eyre\bu- gbd.hc
^_j‘Zedb_\hjehbkldZjbdZ.j^<kdjulb_ H[km‘^_.gkbj__^bggjZhy^hevgkZly-j
ijZ\hcie_\jZevgjhne hklbj_^hklZ\ey_ fZgmZev^ghukdmdk_j^.phn^gZdbgZ\e-y
^hihegbl_eivjghkljZgkl^\eyfZgbim-ey _lklyjZ\fZlbqghjZkk_dZxfyk}ybldZgb
pbdjbmklZghk\bZ[beba Zpbjlzfgdgbc bgZjmrZ_dhkylgudcZjdZjkm^ghbe_ldb
\uihegjZbgyZklh.fhaZ gZ[hevrhifjhly‘_gb2bkfb[he)._Kh
Hlghkbl_ekvgnbo‘hhi_jZpbhgjgbe_ \ahgZ_gZklhfhm[a_zki_qb\gZZedbeZ^u-\Zgbhl_lkl_gvgbhn^hklmhi\urZ_jbkdjh-
_fh[\b\gurdh\gZdhjhgZjgZnjk_jbx

L Z [e b 2 p Z

B g l j Z h i _ j Z p b h b g j e h u ‘ Z c r h j _ a m e v l Z l u

I h d Z a Z l _ e v	: D] j m i i 1 Z	F D] j m i i 2 Z	> F I I] j m i i 3 Z	: D R] j m i i 4 Z
H [s _ \ j _ f y B D f b g	94,17±23,94	73,13±18,61	9,7±0,7	–
< j _ f y j _ j _ ‘ Z l b Z y h j l u f b g	75,85±18,43	52,32±16,32	–	–
> e b l _ e v g h k l V q Z k	7±4,5	6±4,5	6,7± 3,5	6,3±4,2
I h k l m i e _ i g h b ^ j _ g Z ‘ Z f e	209,28±89,71	210,12±98,2	100,2±33,4	230,5±95,7
I j _ [u \ Z g h b j _ Z g b f Z p q b Z b k	19+6,6	18+5,0	12+2,3	17+2,0
G Z o h ‘ ^ _ g k b l _ Z p b h g Z j g v	8,9±0,9	7,6±2,0	5,2±0,4	8
H k e h ‘ g _ f g _ b l y h ^ b d b Z j d j h \ h l _ q _ g b y [) f _ ^ b Z k l _ g b l \) i e _ \ j b l]) g Z] g h _ j g Z b g _ u	 0 0 0 0	 1 0 2 1	 1 0 2 1	 0 0 0 0
E _ l Z e v g h k l v	2	3	1	1

\ h l h q b \ h k l b a u \ Z [_ h l e , v d h l h j Z b l y j Z - g b q b \ Z w l d k d m j] k j b m x ^ g h d e _ l d b b m f _ g v r Z _ l ^ u o Z l _ e v l g h [u t c , f q l h m \ _ e b q b \ Z j _ h l - y l g h k l V h a g b d g h \ g Z g l b g y h b l _ e v j g h u p o - _ k k h \ \ k j _ ^ h k l , g h k b l _ h f b _ e] b m Z ^ b g b u h k e h ‘ g _ g k b k c l h j h g e u _] d b o i h k e _ h i - j Z p b h g g l h f j b h ^ [5, 6]. I h w l h f d m Z j ^ b i - h o b j m j] Z f b i h k l h y g g j h \ h ^ y l k i y h b k d b h m f _ g v r _ g b \ x u r _ i _ j _ q b k e _ g g g _ u ‘ o - e Z l _ e v g u w o n n _ d l G \ _ d h l h j d u Z j ^ b h o b j m j] b ^ h d Z a Z j e _ b b f m s _ k h \ j Z Z g b q _ g ^ g h h k j - h m i Z , k i h f h s v x d h l h j u k o m s _ k l \ _ k g g g b h ‘ Z - l k y j b k d h k e h ‘ g _ , g b b Z y j Z d l _ j g ^ e y k j _ ^ - b g g h d k l _ j g h l h f [7, 8]. L _ f g _ f _ g , _ g _ ^ - h k l Z l d h g f _ [h e v r ^ b h o k l m i y h \ \ e y _ l k k m y ‘ _ g b _ h i _ j Z p b h g i g h h e j y H ^ g Z i d j h m \ _ ^ _ g g g u Z _ f b d e b g b q _ k b k k b e _ ^ h \ Z h g h b p y _ g b d [- t _ d l b \ g d j p b l _ j b l _ h \ i h] j Z - n Z h g Z l h f b q _ k d h Z c g l Z - F I I b g Z e b q \ b g y m l j b i _ j b d Z - j ^ b Z e v ^ h k l m i g h i k l f b _ l h ^ b e k Z a - h g Y j h r _ \ b q Z i h d Z a Z h e i b b f Z e v g h i k j v _ ^ g _ f b g b l h - j Z d h l h f b k b j Z \ Z e y f Z g b i m e y g p Z b b ‘ i j _ - ^ k _ j ^ g h i c j _] h j h ^ (e k ‘ Z d _ e h . \ J , 2002). G Z f b [u e b i j h b a \ _ ^ _ b g g u l j Z h i _ j Z p b h g g k u l _ j g h l h . f b W k l b k e m q [Z u b e b h [m k e h \ e _ g u l h i h] j Z - n Z h g Z l h f b q _ k b d k b k e _ ^ h \ Z i g b b y i h i _ j _ q g k h l c j g h l h f (f b j b l _ a b j h \ Z D) b _ b f b g b l h j Z d h l h k f i b j Z \ Z i j h l _ a b j h \ Z g b F D). J _ a m e v l g Z Z l r u b b o k k e _ ^ h \ Z h g o b Z - a u \ Z x , l q l h i j b i j h l _ a b j h \ Z D b m b] e h u i _ j Z p b h g g h ^] h c k l \ b h y ^ e b g j _ Z g u k h k l Z \ b e b 41–45°, Z i h r b j b g [u e b g _ k d h e [v h d e h v r _ 43–49° b i j b i j h l _ a b j h \ Z F g D (b i j b m k - e h \ b b \ u i h e g _ g b _ y g b q _ k i j d b b _ o f h , \ j Z a - j Z [h l Z g g u g b Z f) b m] e h u i _ j Z p b h g g ^ g h q] k l \ b y i h ^ e b g j _ Z g u k h k l Z \ b 54–57°, Z i h r b - j b g 49–53°, l . _ m] e h u i _ j Z p b h g ^ g h q] k l \ b y [u e b g Z i h j y ^ h \ d u r _ m] e 2 Z °, d h] ^ f Z Z g - b i m e y p \ b u b i h e g y x g k _ y m \ _ j . _ g g h l j Z \ b e v g u \ u c [h j o b j m j] b q _ k ^ d h h k] h l m i Z d j Z a e b q g k u l f j m d l m j k Z _ f j ^ p q Z _ j _ a f _ ‘ j _ [_ j g u c j h f _ ‘ m l h y d \ e y _ l k h y q _ g v b Z ‘ g u f ^ e y j h \ _ ^ _ g Z b ^ y _ d \ Z l g y b j c m - j] b q _ k d h d c h j j _ d p b h b j h d Z F u i j b \ u [h j _ m j h \ g f y b g b l h j Z d h l h b f i b h b i _ j _ q g k h l c - j g h l h f b h b j b _ g l b j h \ Z i e h b m k Z ^ k g h j _ c g l -] _ g h] j Z f . f _ W l h l m j h \ _ g a v Z \ b k h e m j h \ g y j Z k i h e h ‘ _ i g j b Z y \ h] Z l j b h \ Z a Z e m g h e j Z h d h j g y b \ h k o h ^ y s h] l ^ n _ e Z Z h j , u n h j f u] j m ^ g h d e _ l , d j b Z a f _ j k Z _ j ^ p (Z 2 L) B \ Z j - b g u o b \ g m l j b i e _ \ j Z e k v i g Z u _ d b j b l h j Z - d h l h f b b \ 9 k e m q Z g y Z c f i j b r e h k i v _ j _ k _ d Z l v o j y s _ \ m q x Z k l j w y ^ h f e _ ‘ Z s _] h [j , Z \ g _ d h l h j u k c e m q Z ^ y Z o i _ j _ c l g b Z i h i _ j _ q g m x g _ i j Z \ b e v g y u [f h j h f m j h \ g l y h j Z d h l h , f b b \ b ^ h f ^ _ n _ d l k Z b g - m _ k g h a ^ m _ k n _) d b l d h - g k l b l m p b h g Z h e k v l g [h _ c g g h k j l m v x ^ g h d e - _ l d b F u k q b l Z , q f l h h i l b f Z e v g ^ u f f k l m i h f i j b o b j m j] b q _ k d d h h j c _ d p b e b F I I , f b - j Z e v g h [ ] b e b f b l j Z e v - g j h b d m k i b ^ Z e v g h] h i h j h d y Z \ e y _ l ^ k h y k l , m h i k m s _ k l \ e y i h 4 - u c f m f _ ‘ j _ [_ j v (x b g b l h j Z d h) l k f i b j Z \ [Z _ a

i_j_k_q_bgebkihi_j_qguf j_k_q_gb_f^he‘gfulvgZijZ\e_ggZmf_gvr_gjb-_
]jm^b.gu f_gbZghd.k>beymemqr_\gbmyljbk_j^_qguo
Ijb FBOKhi_jZpbhgjgbe_k m‘b\-Z_l fZgbimey,pbbacmZebaZ[jpZbabh\Zkg_bjc^pZ
kygZebqbk_bfkl_fZujl_jbZe,v\g_hgchagh c bijh_^_gZby_d\ZlgabZcsblfubhdZj^\Z
dZgxe^beyh[_ki_q_gbDyb dZgxe^bey g_dhlhjkuemqZhyjcZdhlhfkbxq_lZkeh
_^_gbkyZj^bhie_]bqj_Zkdh\jhj\Zdh i_j_qghkcl_jghlhf.b_ljcbf_g_gbg_ij-_
j_gvZhjlu>eyhk\h[h‘^_gb\ygmljb-k_j ju\ghch\ghc_ogbdjbaZdjulb-5ll b
^_qguobZgxedvZj^bhobjmbjkjdhevamxl ^eybfieZglZpbbkbdmkkl_gbeZ]jlZkg_Zj^p\Z
bfljZevgmkxabpbxha\hebemf_gvrblv kbkl_fport-access” [9, 10], dh]^iZjh\h^yl fbljZevgmkxabpbxha\hebemf_gvrblv
dZgxeypbbxeub_gbZhjlu q_j_ja_jbn_ \j_fyBDbZghdkfbbhdZj^<Z^\mkemqZyo
jbq_kd\b_g (v. jugularis, v. femoralis) bZj- ^eybfieZglZpbbkbdmkkl_gbeZ]jlZkg_Zj^p\Z
l_jbd (a. femoralis) ki_pbZejvZgahjZ[hlZggua fbldZfbMf_gvr_g\bj_f_gbi_jZpbbb-a
ih^kh_^bgkgbkly_BfDiheghklvk\h-[h f_sZ_lkZyd‘mdhjhq_gjb_ff_gkbha^Zgby
‘^Z_hi_jZpbhgjgbe_hldZgxebvdZl-l_ ^hklmidZk_j^p\mgZqZbea_ZdjulbZygu\
jh,\ qlh_kvfZm^h[g^heyfZgbimeypbbdhgphi_jZpbHkh[_gjZ‘gufy\ey_lky
ljbf_g_gb_wlbomkeh\b\yb^_hl_ogbdbmdhjhq_\jbf_gbkdmkkl_\gghbeypbb
beyjh[hlhl_ogfbdgbbfbabjdnZdhkl,mi e_]dbihke_hi_jZpbhgjgbhf[12]. ;e-Z
lZdbZ]j_kkb\g\hkkbv i_jZpbb]h^Zjjyadhfmfgvrgbbgxlgkb\gjhkb
Hlkmlkl\kdh\j_fgfZb_jbZevgdh e_\hkhbg^jh,fZ[mkeh\ejgZgahjhjZgu
gbq_kdkbo^kl_^dmkh_jrgkl\hZgbbxfbgbfbaZpbbZ\cfudhklghdJZjdZjkZ-^
f_lh^bdkbjbf_g_gbkJZg^ZjlgEhDlFu ghcde_ld\bafh‘gjZggyZydlb\baZjpbey
ihevah\Zkbb\kgy^ZjlgdfZbgxey^feyZh-j gu,oqlhiha\heykhldjZlbkljvhdibj_[u\Zgby
lubiheub_g>eyhk\h[h‘^_gb\yjZpb-bhg [hevgujp_Zgbf\pbhdghgdh[13]. <gZr_f
gh]hheyhl_ghagkubokl_fu\h^bebo\g_ gZ[ex^_gbb_bfyBDkhklZ\89±21,3 fbg
jZguq_j_adhehajhaZgmjZgmdZgxex \]jmii1, 78±18,6 – \h2 b9,7±0,7 \3. <j_fy
_jogxxheh\c_gu\h2 beb-_ff_‘j_[_ hddexaZbhbjlu\]jmii1 khklZ\83±17,1
jv_ihiZjZkl_jgZebvegbkjc_^g_dexqbqgbhC fbg\h2 – 57±16,3 fbg
ebgbbbdZgxegxb‘g_ihehc_gu q_j_7-a_ GZ^hlf_lbkvms_kl_gkghkdjZs_gb_
f_‘j_[_jvihi_j_^gih_^furqgehbcg.bb ihlj_[ghklibj_eb\ZgbhbhbaaZfZeuo
GZfbbkihevah\dZZguxerbbjfu“BARD guf bjZaf_jZfhb_jZpbhgjgZkgbbih\j-_
William Harvey”. <ihke_^mxs_f_jaZgkm ^_gb_ffZeh]dhhebq_kdljhZ_ghkgbo
7-ff_‘j_[_jvh_kms_kl\eyjlkgybjh\Zgb_ km^.hJZggyZydlb\baZkpbbykh[kl\kmg-bd
ie_\jZevgjhecbkJbZdbhf[jZa,h\fh\k_o ‘_gbxjbkdhZkeh‘g_gbkdhjhgeu_]dbbo
kemqZhyojZpbhgjgbe_hk\h[h‘^ZehHkv mdhjhq_igbku\Zgbhyevgu\dklZpb-hgZ
kbkl(dZgx)eBvDqlhh[e_]qZkehl\-lkl j_\ihke_hi_jZpbihgjgbhf[14, 15].
\mxsmfxZgbimeygbZdxeZiZgkZjp^pqZj_a <k_wlbmZdlhjuj_^iheZ]mxfl_gvr_
ijbf_g_gbbylh^bdbport-access”. G_fZ-eh gb_k_[_klhbfhkilbjZpbbdbjmj]bq_kdh]h
\Z‘gmjxhev^eyemqr_\bamZebaiZhpbb mkljZg_gbFylbijhl_abjh\ZdgebZyiZgh\
h]jZgbq_ghgihfZpbhgjgbkefb]jZ_ilb- k_j^,pqZlhhq_gbZ‘gh^eygZr_jc_kim[.bdb
f_g_gbeh[guhok_lbl_jeZ_acebqgnubojf Ke_^mhlf_lbldvhkf_lbq_lkdlmjkghm-_
(Luxtex, Filling b^j). jZpbbqlhg_fZeh\Z^ejfheh^uiZpb-_g
<kfZgbimeygpZdbeZiZgkZjp^pqZj_a lh\[16]. DZdijZ\be,ehihke_hi_jZpbhggu_
fZeu_^hklmiuj_[mxl[he_^eblevgh]h jm[puijbwlhfg_aZf_lbggu_h[_ah[j-Z‘b
\j_f_gbBDbZghdkfbbhdZj[12]. Wlhfh- \ZxlZjm^gmbkx_lbkmh_ic,hly‘_gghklvx
‘_lijb_klbl]_fhebagm\jheh]bq_lkdbf B-aaZfZeh]dhhebq_kDkZ gZjZ[-h
ihq_q-jg_hq_ghqghukfeh‘g_gbyefl_evgZy lZxs_fk_j^pj_h\h^bZvgZebbha[km‘^Zlv
ZghdkfbbyhdZj,^^ZZ‘_ijbijh_^_gZb^b-_d f_lh^bdlmkqblZijf_‘^_\j_f_g,gjuhf
\ZlghdcZj^bhie,_]jbbbh^bdlg_h[jZlbfuf kdhevidbnZgbjmjZa\b\Z^lZvggm_xlh^b

d m i j b e _ q _ g d b h o j h g Z j g [h e _ a g k b j ^ , p Z b [h h g Z \ e y _ l f k Z y e h a Z l j Z _ l i g h q t c b ^ \ Z b [h e _ j Z a Z l _ f i j h \ h ^ b h v i _ j Z p b x m k e h \ b y o B D l Z d ‘ \ u k h d i Z k e _ h i _ j Z p b h u g g Z y ‘ b \ Z _ f h k [h v e v g [17, 18, 19].

L Z d b h f i [j Z a h g f Z r h i u l i h f b g b b g \ Z a b \ g h l c o g h e h j l h d b Z a Z [e g Z ^ _ ‘ b \ Z x s b _ j _ a m e v , l f Z _ l u h ^ b y d \ Z e y _ l Z k e y v l _ j g Z l b \ g h c d e Z k k b q _ k d h h f ^ m k j _ ^ b g g k h l c j g h l h f b b j _ a m e v l ‘ Z Z l u i j _ \ h k o h ^ h y f g h] b f i h d Z a Z l . _ D e y k f _ l b q _ k d b c h l l F B O K l Z d ‘ \ u r _ i h k j Z \ g _ g k b ^ x j m] b f f b _ l h ^ b d Z f b j b d h j j _ d p i b Z b l h e h] k b _ b j ^ . p l Z _ f g _ f _ g , _ g _ h [o h ^ b f Z h e v g _ c m _ k _ h \ _ j r - g k l \ h \ Z g l b \ g _ ^ j _ g f f b _ g b f Z e - v b g g h \ Z a b \ g h c l _ o g b d ^ l e y d h j j _ d p i b Z b l h e h] k b c j ^ _ q g h k h k m ^ b k l h h k d _ f k u b k i h e v a h \ Z m g k e v - l f j Z k h \ j _ f _ g g Z h i c Z j Z l m j b u g k l j m f _ g l Z b j b _ \ h [h j m ^ h \ . Z g b y

E b l _ j Z l m j Z

1. : d q m j b k g , R b j y _ : \ : ., = Z e y m l ^ b g F h \ b ^ j : d l m Z e v g h u i j h k Z h j l h d h j h g Z j g h j h r m g l b j h \ Z - g F 5 . y 2004.
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18. F b o _ : . \ : ., D e _ f [h \ k d b , c L j Z \ b G H H i _ j Z p b g b Z d h j h g Z j g Z u j b _ j b y g o Z j Z [- h l Z x s _ f k _ j ^ p [_ a b k i h e v a h \ Z g i b Z y j Z l Z b k d m k k l \ _ g j g h \ ] h h h [j Z s // g = b j y m ^ g b Z y k _ j ^ _ q k g h h k m ^ b k b Z y m j] = b 1991. – 10. – K. 23.
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