

# A Prospective Comparison of the Drilled Balloon and Over the Wire Balloon Using to Visualizing the Distal Lumen of Total Occlusion

## Total Oklüzyon Distalindeki Lümeni Göstermek İçin Delinmiş Balonla Over the Wire Balon Kullanımının, Etkinlik, Güvenirlik ve Maliyet Açısından Karşılaştırılması

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**ABSTRACT Objective:** In this study we have compared the usage of Drilled Balloons (DB) and Over the Wire (OTW) Balloons using at the TrueLumen test in terms of efficacy, reliability and cost. **Material and Methods:** 137 consecutive patients in 142 procedures (5 patients are common) with coronary total occlusion (TO) onset before or during the intervention, were consecutively enrolled. 1.25x15 mm DB in 73 procedures and OTW in 69 procedures were used to visualizing the rear of the total lesion in situations in which antegrade fill was not achieved at the moment when the 0.014 guidewire passed TO. **Results:** The baseline characteristics were found comparable in both groups. Furthermore, the amount of contrast agent used (45.11±8, 97 mL vs 47.97±10, 47 mL, p=0.082), and the cost was lower found in the DB group (\$482±170 vs \$698±194, p<0.001). Additionally, the procedure time was similar found in two groups (15.64±3.77 vs 15.95±2.68, P=0.575). **Conclusion:** Using a DB to image the distal point of TO is less expensive and more practical than the OTW balloon. In addition during injection of contrast agent via DB, the balloon can be moved back and forth through the 0.014 guidewire in contrast to OTW. The behind of lesion can be displayed in detail such as “traveling in a tunnel with a projector” with the help of DB method.

**Keywords:** Coronary occlusion; angioplasty, balloon, coronary; percutaneous coronary intervention

**ÖZET Amaç:** Biz bu çalışmada total koroner tıkanıklıklarında tıkalı bölge distalini göstermek için kullanılan truelumen testinde delinmiş balonla (DB) over the wire (OTW) balonun etkinlik, güvenirlilik ve maliyet analizini karşılaştırdık. **Gereç ve Yöntemler:** İşlem anında veya işlemde önce gelişen total oklüzyonu (TO) olan 142 işlemde yer alan ardışık 137 hasta çalışmaya dahil edildi. 0,014 guidewire lezyondan geçtikten sonra distal doluş elde edilemeyen TO vakalarında lezyon distalini göstermek amacıyla 73 vakalık bir grupta DB, 69 vakalık diğer grupta OTW balon kullanıldı. 5 hasta, 2 farklı seansta farklı damarlar için işleme alındı, böylece 2 grupta da yer aldılar. **Bulgular:** Bazal özellikler iki grupta da benzer bulundu. Kullanılan kontrast ajan miktarı (45,11±8,97 mL vs 47,97±10,47 mL, p=0,082), maliyet (482±170\$ vs 698±194\$, p<0,001) DB grubunda daha az, işlem süresi (15,64±3,77 vs 15,95±2,68, P=0,575) iki grupta da benzer bulundu. **Sonuç:** TO distalini göstermek için DB kullanımı, OTW balona göre hem daha ucuz hem de daha pratiktir. Ek olarak OTW balonun aksine, DB ile kontrast ajan verilirken balon 0,014 guidewire üzerinde ileri geri hareket ettirilebilir. Lezyonun distali aynı “karanlık bir tünelin içinde projektörle gezmek” gibi detaylı olarak görüntülenebilir.

**Anahtar Kelimeler:** Koroner tıkanma; anjiyoplasti, balon, koroner; perkütan koroner girişim

**D**uring percutaneous intervention, total occlusion may occur or no reflow may develop unluckily. Therefore, the rear of the lesion may become invisible. At this time, the state of an invasive cardiologist with an inability to see the distal of the lesion is similar to that of

a “fireman in a burning dark building”. Knowing that the 0.014 guidewire is in the TrueLumen is, for the cardiologist, like a fireman finding the exit. The test applies at the time of total occlusion for make behind of lesion apparent. A drilled balloon is sent to the lesion distal via the 0.014 guidewire we used in the percutaneous coronary intervention (PCI). When the balloon arrive at the distal of total occlusion, the distal lumen could be appearable with contrast agent injection via drilled balloon lumen. We think the TrueLumen test is a harmless, practical, and effective method that will help the cardiologist that may perform with any small size drilled monorail balloon and could applicable in every catheterization laboratory.<sup>1</sup>

We have been using this method in our laboratory for two past years, for showing the area behind the total occlusion including the chronic total occlusion (CTO) by injecting opaque with DB (drilled balloon) made out of body. We used this method as well as the over the wire (OTW) balloon compared the two methods in terms of efficiency, reliability, and cost effectiveness.

As might be expected, the failure of distal imaging in total occlusions can lead to many complications. Catheter-related dissections, lumen loss, false lumen stenting as a TrueLumen may be encountered in ordinary angiographic interventions. Sometimes, the results can be catastrophic.<sup>2-7</sup>

The development of dissection in the vessel, side-branch loss, rhythm disturbances, and excessive opaque usage are complications of total occlusion interventions. These situations are further exacerbated by the prolongation of the process time.<sup>8-10</sup>

As of today, expensive methods such as intravascular ultrasound and optic coherence tomography can also be used to locate the side branch ostium when appeared occlusion, and may also differentiate the actual lumen in the case of lumen evolving dissection. Therefore, these methods are impractical, as the lesion needs to be expanded in order for these devices to pass.<sup>6,11,12</sup>

It is possible to see the distal of lesion and even evaluate the lesion without expanding the lesion by TrueLumen test. The presence of a thrombus in

distal to the lesion in the acute myocardial infarction can surprisingly be detected with this test, without the necessity of a balloon. For example, when we see intense thrombosis after the total occlusion, we should avoid using a large balloon. Thrombus aspiration should be performed in such cases. In this way, many complications can be prevented by this method.

The true lumen decision is made by looking at the wire shape and the feeling from the guidewire when the wire passes after the total lesion in most PCI case. *The lesion is ballooned with an approximate estimation in most cases.* This sometimes leads to dissection, sometimes to balloon application to the false lumen, and sometimes to rupture of vessel.<sup>2,4,10,11</sup>

## MATERIAL AND METHODS

**Patient selection:** This test was performed to see the distal region of the total occlusion in 137 patients of 385 consecutive patients who signed the informed consent form before PCI was performed from September 2017 to May 2018. Before the study begin, ethics committee approval was obtained with the number 71522473/171 from the university in our region 40 target lesions had CTOs. The remaining 102 target lesion had acute total occlusion or there were developed a total occlusion during the procedure. The total number of patients was 137, but 2 different arteries were treated with both methods at different sessions for 5 common patients. Therefore, the total target vessel and the total number of subjects for comparison are 142. This test was performed with OTW balloon in 69 vessels and DB in 73 vessels. The randomization was made consecutively with 1;1. The study was prospectively conducted according to Declaration of Helsinki-ethical principles for medical research involving human subjects. The informed consent was obtained from all patients who participated in this study.

Patient epicrisis data, angiographic data and procedural information and cost information were analyzed retrospectively, per Figure 1.

**Procedural method:** Patients with ischemic symptoms and angiography decision underwent

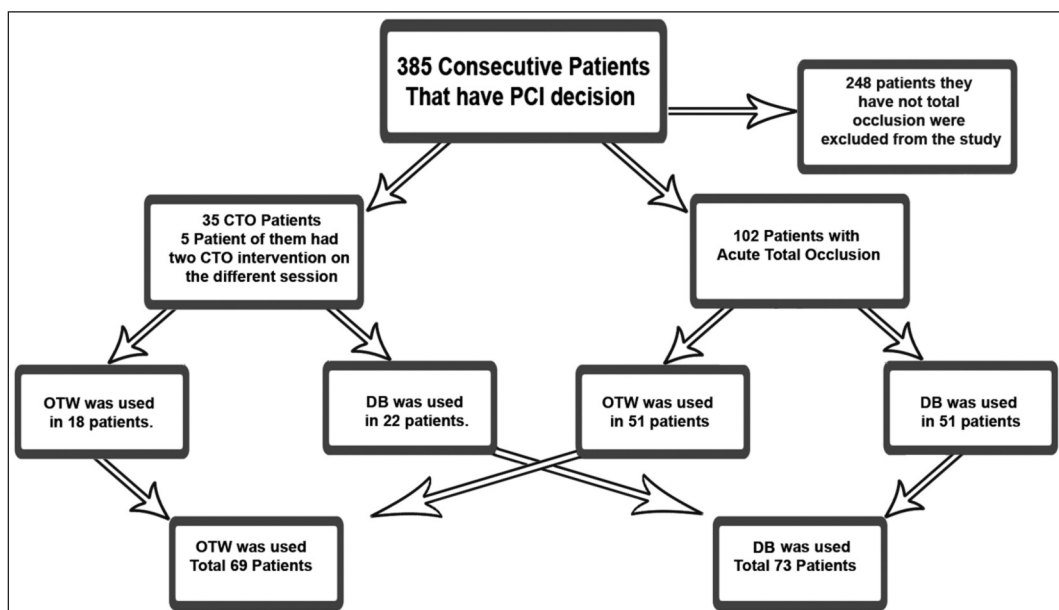


FIGURE 1: Flow chart of the study.

transradial or femoral underwent coronary angiography. All patients of transradial approach underwent a Barbeau Test to determine if enough blood flow from the ulnar artery was present in the fingers. In these patients, after radial site sterilization and local anesthesia, radial artery was cannulated with 5 F Terumo sheath. Left and right coronary angiography were performed on them. 1.20-1.25-1.50 mm diameter 12 mm length compliant balloons were used in the procedure. It was inflated 10 atm with 50% opaque substance and 10 units unfractionated heparinized isotonic solution in ml. The balloon was drilled a few times with a sterile injector tip. Continuing to pass fluid through the balloon with the inflator, the balloon was loaded into the system, ensuring that there was no air in the balloon. After reaching in vivo conditions, the balloon was taken in using negative pressure with the deflator and, after passing the lesion; distal coronary artery angiography was performed by injecting diluted opaque into the distal area. In each case of OTW group, a 300-cm guidewire was used. While the balloon was distal, the long guidewire was withdrawn for imaging of distal lumen and 50% diluted opaque with isotonic NaCl solution was injected throughout the balloon's main shaft (Figure 2-6, Video 1).

Additionally, the duration of treatment, amount of opaque material used, and procedure complications were recorded for both groups.

In this way, we showed that we achieved a TrueLumen in 137 patients with a low amount (2-3 cc) of opaque (Figure 3-6).

#### Definitions of the criteria based on comparison:

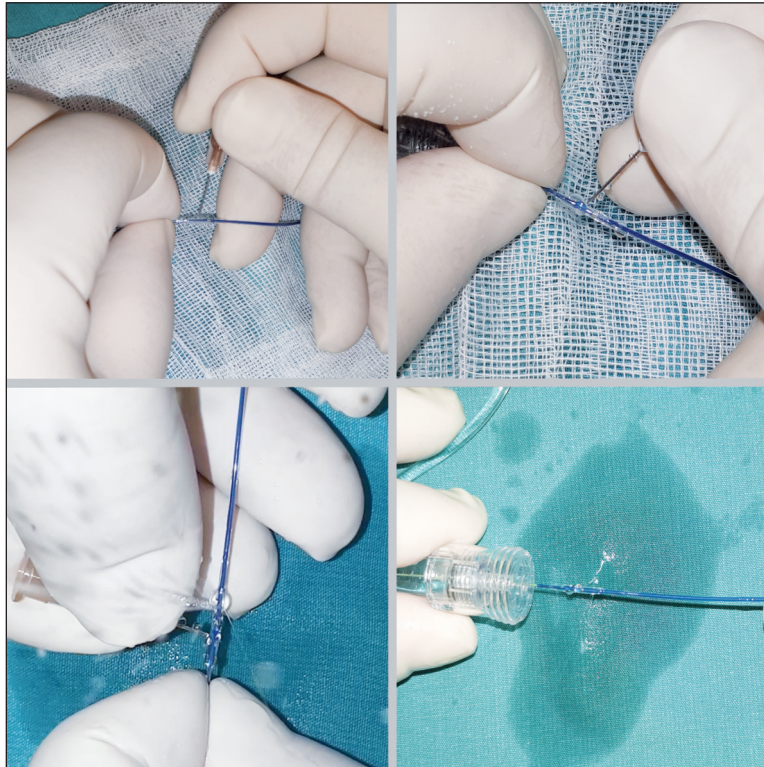
**Procedure time:** Duration of procedure was measured after the coronary angiography process and terminated after pulling the catheter.

**Fluoroscopy time:** Fluoroscopy time was recorded as the duration of PCI excepting coronary angiography in each case for purpose of comparison.

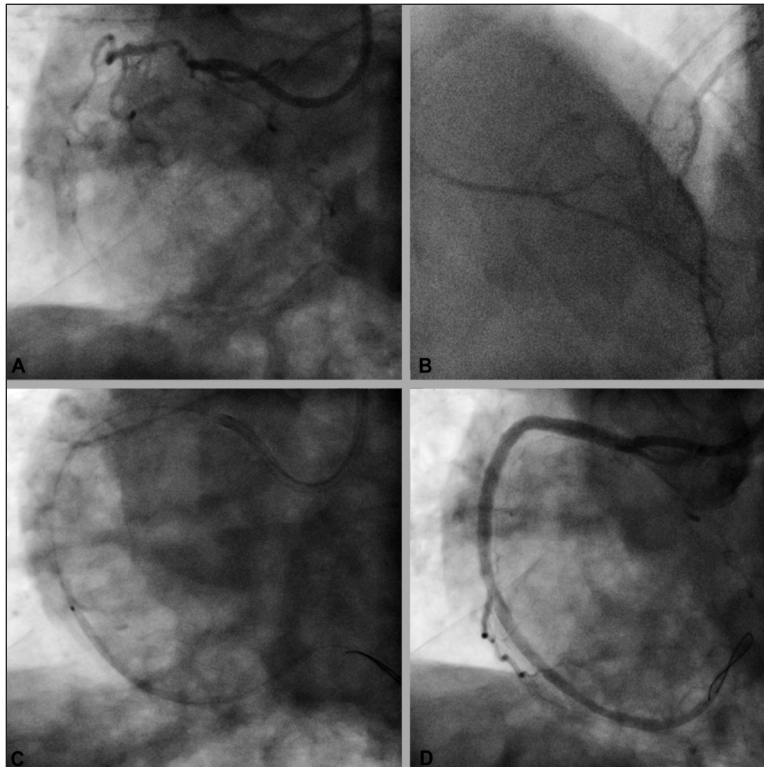
**Amount of opaque material used:** Amount used for imaging purposes in each process for each case.

**Needing to Rewire for the TrueLumen visualizing:** While the OTW balloon was in the distal, the long guidewire was withdrawn for imaging of distal lumen, but this was not needed for DB use.

**Balloon Migration during Rewire:** Retracting the guidewire can cause loss of lumen.

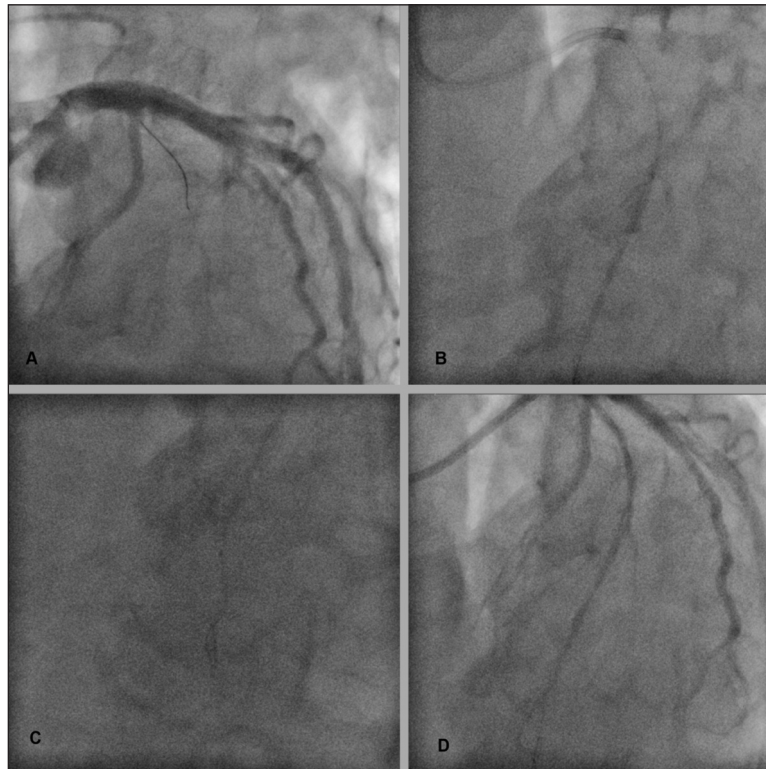


**FIGURE 2:** Drilling of monorail PCI balloon after loading on 0.014 guidewire and under positive pressure.

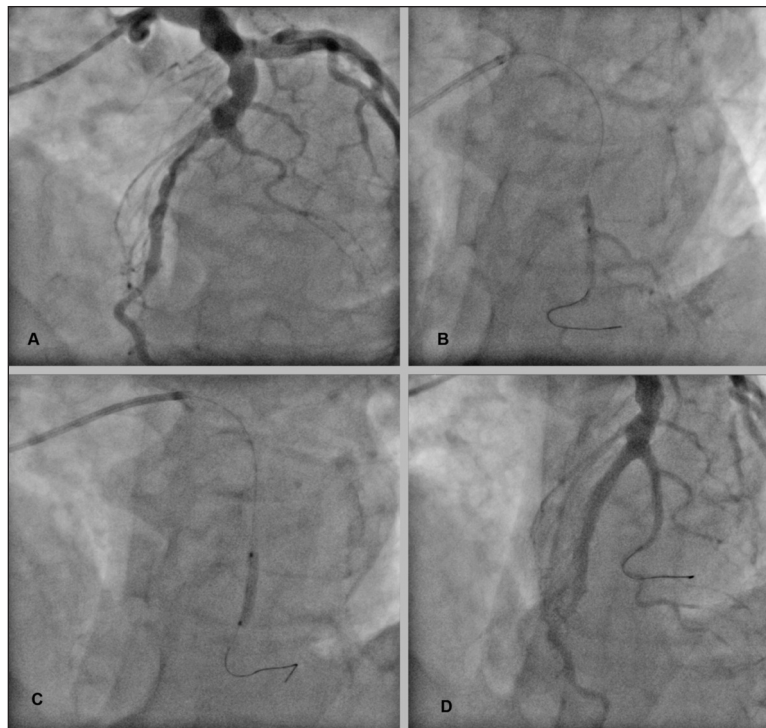


**FIGURE 3:** CTO of right coronary artery (RCA) **A**) There is no flow in RCA before PCI **B**) Displaying TrueLumen in RCA with the retrograde coronary angiography **C**) Display of distal RCA in DB balloon **D**) The Visualization of blood flow in RCA after stent application.

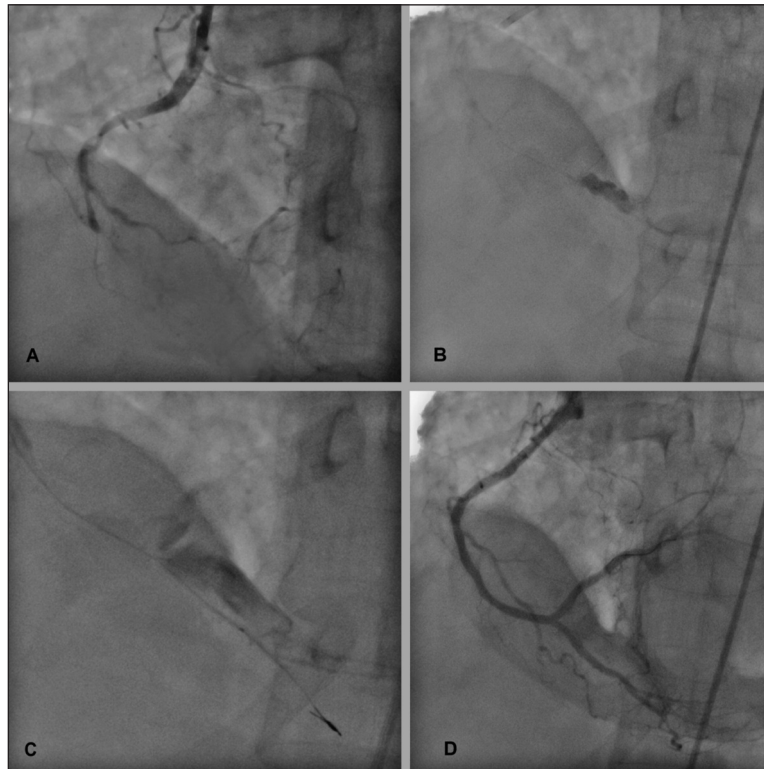




**FIGURE 4:** CTO of left anterior descending artery (LAD) **A)** There is no flow in LAD before PCI **B)** Displaying TrueLumen in LAD with DB balloon **C)** Display of distal LAD in DB balloon **D)** Visualization of blood flow in LAD after balloon application.



**FIGURE 5:** Acute Total Occlusion of Diagonal artery in High Lateral MI **A)** Diagonal artery does not appear on the left cranial view **B)** Imaging of Diagonal artery with DB. **C)** The viewing of Stent implantation to the lesion **D)** Final view of diagonal artery after PCI.



**FIGURE 6:** Use of OTW balloon in the TrueLumen test. **A)** The RCA does not appear after the Right ventricular artery in the CTO of RCA First View. **B)** When the wire is pulled back and opaque injection, the opaque looks like a cloud of tissue **C)** Displaying PDA with TrueLumen test after finding real lumen with Rewire **D)** The Image of the end of intervention of PDA and Posterolateral arteries.

**Loss of lumen by Rewire:** The guidewire must be reinserted in order to continue the operation after the guidewire has been withdrawn and the distal of lumen is displayed. The lumen may be lost when the guidewire is reoriented.

**The outside or false lumen demonstrating:** The right demonstration that is the guidewire is outside of TrueLumen with TrueLumen test; that is in tissue, pericardial space or adventitia.

**Local Hematoma:** That refers to lesser amount hemorrhage that was not interfere to hemodynamic situation.

**Major hematoma or Bleeding:** That refers to major blood loss at the cause to hemodynamic instability.

**Worsening ECG with PCI:** The significant ECG changes possible related to the procedure these are the pathological Q-wave, QRS widening, atrioventricular (AV) block development, ST elevation, and R progression loss in precordial derivations. The Transient ECG changes are not included in this pa-

rameter that are seen at the moment of the process and are recovered at the end of the process.

**Malignant Arrhythmias:** The process-related sustained ventricular tachycardia and ventricular fibrillation that are needs cardiopulmonary resuscitation (CPR) and DC cardioversion

#### STATISTICAL ANALYSIS

The 95% confidence interval was used to estimate the precision of the Odds ratio. Continuous variables are presented as mean  $\pm$  standard deviation and nominal variables as numbers and percentages. Comparisons between the two methods were made by Student's t-test and descriptive exploration statistics for continuous variables and chi-square or Fisher's exact test for nominal variables. A 2-sided P-value below 0.05 was considered significant.

#### RESULTS

When we look at the statistical analysis results; baseline characteristics were comparable between the two groups in terms of with Diabetes mellitus,

previous PCI, Previous Coronary Artery Bypass Graft (CABG) operation, current smoking, hypertension, hypercholesterolemia, target vessel, renal failure, serum creatinine level, CTO proportion, per Table 1.

Likewise, in both groups, the TrueLumen test was 100% successful in showing the distal of lesion. The InterQuartile Range (IQR) and median values of the both groups were found to be homogeneously comparable. The amount of contrast agent used ( $45.11 \pm 8.97$  mL vs  $47.97 \pm 10.47$  mL,  $p=0.082$ ) and duration of the procedure ( $15.64 \pm 3.77$  vs  $15.95 \pm 2.68$ ,  $P=0.575$ ) were found to be similar in both groups as well. Otherwise the Fluoroscopy time was found less in the OTW group than in the DB group ( $8.27 \pm 1.96$  min vs  $9.16 \pm 3.10$ ,  $p=0.043$ ). The procedure costs significantly less than the OTW group ( $\$482 \pm 170$  vs  $\$698 \pm 194$ ,  $p<0.001$ ).

Nevertheless, local hematoma and sheet site complications (4 (5.5%) vs 6 (8.7%),  $P=0.524$ ), malign arrhythmia (2 (2.7%) vs 2 (2.9%),  $P=0.954$ ), worsening ECG changes (2 (2.7%) vs 1 (1.4%),  $P=0.593$ ) were found to be similar in both groups.

Needing to rewire for the true lumen visualizing (0(0%) vs 69(100%),  $P<0.001$ ), Balloon Migration (0 (0%) vs 6 (8.7%),  $P=0.012$ ) and Loss of lumen during Rewire (0 (0%) vs 4 (5.8%),  $P=0.049$ ) were found significantly less in DB group than the OTW group.

Furthermore, the local hematoma and sheet site complications (4 (5.5%) vs. 6 (8.7%),  $P=0.524$ ), malign arrhythmia (2 (2.7%) vs 2 (2.9%),  $P=0.954$ ), worsening ECG changes (2 (2.7%) vs 1 (1.4%),  $P=0.593$ ) were found to be similar in all subgroups of the study in based on target vessels.

The amount of contrast agent used, procedure time, and fluoroscopy time was found similar in all subgroup of study in based on target vessels as well.

Major complications mortality or morbidity was not observed in either group, per Table 2.

## DISCUSSION

Total occlusion or no-reflow may occur at the time of the PCI unluckily. These bad situations may occur during the PCI of any cardiologists at any

**TABLE 1:** Baseline characteristics of study patients.

	OTW Balloon (n:69)	Drilled Balloon (n:73)	P
Age (year)	64.46±13.35	64.25±10.50	P=0.914#
Gender Female (n, %)	22 (31%)	24 (32%)	P=0.897^
Current Smoker (n, %)	31 (44%)	40 (54%)	P=0.251^
Diabetes Mellitus (n, %)	25 (36%)	28 (38%)	P=0.857^
Hypertension (n, %)	68 (97%)	67 (90%)	P=0.177^
Hyper Cholesterolemia (n, %)	55 (78%)	65 (87%)	P=0.167^
Previous CABG (n, %)	14 (20.3%)	17 (23.3%)	P=0.690^
PCI or Not (n, %)	70 (100%)	74 (100%)	P=0.990^
Previous PCI (n, %)	37 (53%)	41 (55%)	P=0.867^
Serum Creatinine	1.00±0.28	1.10±0.65	P=0.262#
Chronic Renal Failure (n, %)	4 (4.3%)	3 (4.1%)	P=0.944^
CTO (n, %)	19 (27.5%)	21 (28.8%)	P=0.871^
Target vessel			
LAD	25 (36.2%)	32 (43.8%)	P=0.394^
CX	16 (23.2%)	14 (19.2%)	P=0.681^
RCA	28 (40.6%)	27 (37.0%)	P=0.731^

# They were analyzed by independent sample t test with 95% confidence interval.; ^ They were analyzed by chi square correlation test.

CABG: Coronary Artery Bypass Grafting; PCI: Percutaneous Coronary Intervention; CTO: Chronic Total Occlusion; LAD: Left Anterior Descending Artery; CX: Circumflex artery; RCA: Right Coronary Artery; OTW Balloon: Over The Wire Balloon.

time. Staying in such a situation is like losing your way in the dark. In such a case, we feel like a firefighter trying to get out of the dark burning building. During this time, we urgently want to see the distal lumen. Did the guidewire get out of lumen or is it in the real lumen? We can get the answer to this question immediately by piercing a balloon and passing to distal of the lesion and opaque injecting. We can also use OTW balloon or micro catheter for this purpose. But using OTW balloons for this purpose is not as practical as DB, because retracting the guidewire is necessary for visualizing the distal lumen when using OTW balloon. Retracting the guidewire can cause loss of lumen. During this time, the OTW balloon must remain motionless in the vessel. Balloon shifting is dangerous when there is no guidewire in it. The great advantage of using DB is that when opaque is given, the balloon position can be changed at the same time and the desired location can be seen in more detail.

In the OTW group, it was necessary to retract the guidewire in each case, although it was not necessary to retract the guidewire in the DB group for distal imaging. *This requirement is from the*

TABLE 2: Results.

	OTW Balloon (n:69)	Drilled Balloon (n:73)	P
Procedure time (min.)	15.64± 3.77	15.95± 2.68	P=0.575#
Fluoroscopy Time (min.)	8.27±1.96	9.16±3.10	P=0.043#
Amount of contrast media used (mL)	47.97±10.42	45.11±8.97	P=0.082#
Procedure cost, excluding stent and operator cost (\$)	688±194	482±170	p<0.001^
Needing to Rewire for the true lumen visualizing	69(100%)	0(0%)	P<0.001^
Balloon Migration During Rewire	6 (8.7%)	0.0%	P=0.012^
Loss of lumen during Rewire	4(5.8%)	0(0%)	P=0.049^
The number of patients with complications	8(11.6%)	7(9.6%)	P=0.788 ^
The Outside or False lumen demonstrating	5(7.2%)	6(8.2%)	P=0.760^
Local Hematoma & Sheet site complication	6(8.7%)	4(5.5%)	P=0.524^
Major hematoma	0	0	-
Demonstrating of extravasations by TL test*	6(8.7%)	5(6.8%)	P=0.760 ^
Malignant arrhythmias	2(2.9%)	2(2.7%)	P=0.954^
Worsening ECG with PCI	1(1.4%)	2(2.7%)	P=0.593 ^
Total CTO case count	18(27.5%)	22(30.1%)	P=0.735^
Procedure time (min.) Median/IQR	15.Haz	16.Mar	
Amount of contrast media used (mL) Median/IQR	50/15	45/15	
Procedure cost \$ , Median/IQR	650/375	450/300	

# They were analyzed by independent sample t test with 95% confidence interval; ^ They were analyzed by chi square correlation test.

CTO: Chronic Total Occlusion; IQR: Inter Quartile Range; PCI: Percutaneous Coronary Intervention; OTW Balloon: Over The Wire Balloon \* Demonstrating the guidewire that is Outside of vessel by TL test, in tissue or pericardial space; TL: The True Lumen test. Major Hematom or bleeding: That is life threatening blood loss. Loss of lumen during Rewire: The retracting guidewire is necessary for visualizing the distal lumen when using OTW balloon. Retracting the guidewire can cause loss of lumen. Balloon Migration during Rewire: The OTW balloon must remain motionless in the vessel during the opaque injection and guidewire withdrawing. Balloon shifting is dangerous when there is no guidewire in it. The number of patients with complications: The number of patients having complications at or immediately after the procedure. Procedure time: Total time spent on PCI except the coronary angiography (CAG) time. The CAG time are excluded from the assessment because it is a time used at the CAG is independent of PCI and may be misleading in the comparison.

*nature of the OTW balloon.*<sup>13,14</sup> Opaque injection is not possible without not extracting the guidewire from the OTW balloon, because the guidewire occludes the channel of balloon that necessary for opaque injecting. For this purpose, “y connector” was tried, but the opaque could not be injected because the wire occluded the channel completely. The purpose of comparing this situation in the study was to emphasize the issue statistically.

The wire could not enter the TrueLumen again in the 4 of 6 patients After successful distal imaging in 6 cases in the OTW group. Since we are not to be obliged to withdraw the guidewire to display on lumen we did not encounter such a situation in the DB group.

OTW balloons are 3-4 times more expensive than routinely-used percutaneous coronary mono-rail balloons as of today. The requirement to use a 300-cm guidewire is also a negative contribution to

the cost. For this reason, the cost of the procedure in the OTW balloon group is higher than that of DB group (\$702±202 vs \$479±162, p<0.001), Table 2.<sup>13,14</sup>

The undesired blood flow is minimal or even absent from the proximal side of the total lesion to distal site because the drilled balloon is thin, and no balloon was inflated in this total lesion. The 1.25 balloon is an average of 2.4 F diameter and is maintained, even if it is drilled, if it is received in the negative press. The 1.25 Ryujin® balloon is thinner than most microcatheters and OTW balloons. The diameter of the “Ryujin® plus 1.25 balloon” is 2.4 F (0.80 mm) but the tip is 1.4 F (0.42 mm). The diameter of the “tip” of Finecross microcatheter is 1.9F (0.65 mm), which is a single-channel microcatheter and a product of Terumo. If the balloon passing the lesion is out of the TrueLumen or vessel, we can detect it with our test and when we retract the balloon, the leak will be small and



self-limiting because the balloon is not inflated on the total lesion. This blood leak does not reach a size that will compress the TrueLumen. If a pressurized hematoma occurs at the distal site, the pressure can be reduced by aspirating it with a drilled balloon.

When the opacity remains attached throughout the lesion, and the side branches disappear, we determine that is in the false lumen during TrueLumen test. When we encountered these situations, we perform a rewire and we are find the TrueLumen. If our guidewire came out to the tissue from the adventitia, the opaque gives a cloud image in the outside tissue of the vessel. It does not disperse immediately (Figure 5). When the guidewire goes out of the vessel or enters the thin coronary, it becomes "ventricular extrasystole". The operator often understands this, but does not determine extrasystole status if the tissue has lost sensitivity or the guidewire has entered into scar tissue.

In two of our patients, the guidewire entered the pericardial space (The guidewire was "progress 120"). We immediately understood the event without the need for a TrueLumen test. We made a rewire and found the TrueLumen. There is no leakage into the pericardium or tissue when the guidewire is pulled back from the wrong channel in most CTO cases.<sup>15-20</sup>

Is there an advantage to open CTO? To answer this question, we searched for publications that investigated the contribution of CTO intervention to the patient. At three years follow-up, all cause-related deaths were found to be similar in patients with and without successful CTO intervention (9.0% versus 13.1%,  $p=0.18$ ), while cardiac death rates were lower in the successful PCI group (4.5% vs 8, 4%,  $p=0.03$ ). However, there were no differences in all-cause mortality ( $p=0.69$ ) and cardiac mortality ( $p=0.16$ ) for both groups when adjusted for patient characteristics. Successful interventions in CTO patients who have not undergone CABG have been reported to reduce the need for CABG operation (1.8% versus 19.6%,  $p<0.0001$ ).<sup>21-32</sup>

**Study Limitation:** A single blind study can be planned for a more valuable comparison. But the analysts should not understand the method during watching angiography for Blinded study therefore that should not be record the balloon move during TrueLumen test application.

Another limitation of our study is the number of holes in this study is not standardized and If the images was recorded with pure opaque, the sample videos were more demonstrative.

Also, if the number of patients is higher and a multicentre study is conducted, more convincing results can be obtained.

## CONCLUSION

Whereas the use of DB is very practical and safe to see the distal of acute or chronic total occlusion and the facilities available in each laboratory are sufficient to use this method. While it is possible to see the lesion distal with a simple and safe way in all occluded lesions, ballooning of the total lesion seem a wrong way.

In this study, DB and OTW balloons were compared for our aim. The success rate of showing the behind of lesion in both groups is 100%. Complication development, duration of treatment, and opaque consumption was found to be lower in DB. When doing this with a drilled balloon, the guidewire does not need to be retracted, as opposed to the OTW balloon. Additionally, the balloon can be moved back and forth, as opposed to the OTW balloon.

In other words, the use of a drilled balloon to see the distal point of the total lesion is practical, effective, safe, and cost effective.

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### Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

### Authorship Contributions

**Idea/Concept:** Yakup Balaban, Merih Akbaş; **Design:** Yakup Balaban, Merih Akbaş; **Control/Supervision:** Yakup Balaban, Merih Akbaş; **Data Collection and/or Processing:** Yakup Balaban, Merih Akbaş; **Analysis and/or Interpretation:** Yakup Balaban, Merih Akbaş; **Literature Review:** Yakup Balaban, Merih Akbaş; **Writing the Article:** Yakup Balaban, Merih Akbaş; **Critical Review:** Yakup Balaban, Merih Akbaş; **References and Fundings:** Yakup Balaban, Merih Akbaş; **Materials:** Yakup Balaban, Merih Akbaş.

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